

SCS ENGINEERS

**Results of Subsurface Investigation with 1st Quarter and 2nd
Quarter 2005 Groundwater Monitoring and Sampling
Events and Work Plan for Additional Subsurface
Investigation**

**Weeks Drilling & Pump Company, Inc.
6100 Sebastopol Road (Highway 12)
Sebastopol, California
(SCDHS ID #00001493; NCRWQCB Site #1TSO680)
(Assessor's Parcel No. 060-020-019)**

File Number 01203340.00

Prepared by:

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To:

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9 June 2005


LIMITATIONS/DISCLAIMER

This report has been prepared for Weeks Drilling & Pump Company, Inc. with specific application to subsurface exploration, quarterly monitoring events, and proposed subsurface investigation for the property located at 6100 Sebastopol Road, Sebastopol, California. This report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. The conclusions contained herein are based on analytical data, and points of exploration. The nature and extent of subsurface conditions may and likely do vary between borings and/or points of exploration. No other warranty, either expressed or implied, is made as to the professional conclusions and proposal presented herein.


Access to the property and the surrounding area was and is limited by buildings, roadways, underground and above-ground utilities and other miscellaneous site and site vicinity features. Therefore, the field exploration and points of subsurface observation were and are somewhat restricted.

Changes in site use and conditions may occur due to man-made changes or variations in rainfall, temperature, water usage, or other factors. Additional information which was not available to the consultant at the time of this assessment and proposal or changes which may occur on the site or in the surrounding area may result in modification to the site and the vicinity that would impact the summary and proposal presented herein. This report is not a legal opinion.

We trust this report provides the information you require at this time and we appreciate the opportunity to work with you on this project. If you require any additional information, or have any questions, please do not hesitate to contact SCS at (707) 546-9461.


Kevin L. Coker REA 7887
CA registration fees paid through 06/30/05

6/5/05
Date


Stephen Knuttel PG 7674
CA registration fees paid through 07/31/05

15 JUNE, 2005
Date



Introduction

SCS Engineers (SCS) is pleased to present the results of subsurface investigation, the 1st and 2nd Quarter 2005 groundwater monitoring and sampling events and a work plan for additional subsurface investigation for Weeks Drilling and Pump Company, Inc. (Weeks), 6100 Sebastopol Road, Sebastopol, California. The subsurface investigation described herein was performed in accordance with SCS' Work Plan (SCS, 2004d) which was subsequently approved by the Sonoma County Department of Health Services (SCDHS, 2004b). A proposal for additional investigation has been included in this report with regulatory concurrence from the SCDHS (SCDHS, 2005). The site is located as shown on the Site Location Map, Figure 1 (Assessor's Parcel No. 060-020-019). General site features are shown on the Site Plan, Figure 2.

Background

One 10,000 gallon unleaded gasoline underground storage tank (UST) was removed from the site in December 1997 by MRL Underground Tank Testing. One 1,000-gallon UST which previously held gasoline was abandoned in-place under the direction of the Sonoma County Department of Emergency Services (SCDES) on September 17, 2003. The approximate former location of the 10,000 gallon UST is now occupied by an above ground storage tank which is shown on Figure 2; the approximate location of the 1,000-gallon UST is as shown on Figure 2. The results from two soil samples collected from the 10,000-gallon UST excavation and one soil sample collected from the stockpiled soil indicated that concentrations were below the laboratory method detection limit (MDL) for total petroleum hydrocarbons (TPH) as gasoline (g), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Groundwater was present in the UST excavation and a sample of the groundwater was collected and analyzed. The sample contained 2,500 micrograms per liter (ug/L) TPH-g, 2,100 ug/L MTBE, 29 ug/L benzene, 130 ug/L toluene, 25 ug/L ethylbenzene, and 150 ug/L xylenes. It is SCS' understanding that the soil was disposed as an inert material based on the analytical results. The excavation was subsequently backfilled. The SCDHS subsequently issued an Underground Storage Tank Unauthorized Release/Contamination Report (SCDHS, 1998).

UST Abandonment In-Place

The 1,000-gallon gasoline UST was abandoned in-place due to its location beneath the building. Weeks abandoned the UST by pumping cement/sand slurry from the bottom of the UST to the top. All residual fluids contained within the UST were captured through the vent tube and subsequently pumped into 55-gallon UN/DOT-approved drums (approximately 120 gallons). UST abandonment in-place was overseen by a representative from the SCDES. A report summarizing the abandonment in-place activities (which includes an Underground Storage Tank Unauthorized Release/Contamination Site Report) was prepared and submitted (SCS, 2003c).

Two slant borings (B-6 and B-7) were drilled at the approximate locations shown on Figure 2 on September 4, 2003 in order to evaluate the soil and groundwater to the extent feasible beneath the UST which was abandoned in-place (SCS, 2003c). This strategy was agreed upon in the field with the concurrence of the SCDHS inspector. One additional monitoring well (MW-9) was drilled and installed at the approximate location shown on Figure 2 on September 6, 2003. TPH-g was detected in each of the soil samples collected from B-6, B-7 (slant borings), and MW-9, with the exception of the MW-9-10' sample, at concentrations ranging from 8.7 mg/kg in B-7-10' to 3,200 mg/kg in B-7-5'. BTEX constituents were detected in each of the soil samples, with the exception of the B-6-15' and MW-9-10' samples, at concentrations ranging from 0.08 mg/kg benzene in B-7-10' to 190 mg/kg xylenes in B-7-5'. MTBE was not detected above the MDL in any of the samples analyzed. Lead was detected in each of the samples analyzed, with the exception of B-6-10', at concentrations ranging from 7.0 mg/kg in B-6-15' to 9.0 mg/kg in B-6-5'. Analytical results are summarized in Table 1.

Previous Environmental Investigations

Pacific Northwest Environet Group (PNEG)¹ oversaw the drilling and sampling of five borings (B-1 through B-5) at the approximate locations shown on Figure 2 on July 7, 1999 (PNEG, 1999). The soil samples were analyzed for TPH-g, BTEX, and MTBE. The soil samples were below the MDL for all analytes (Table 1).

Groundwater samples from borings B-1 through B-5 were analyzed for TPH-g, BTEX, the five ether-based oxygenates (MTBE, diisopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tert-amyl methyl ether (TAME), and tert-butyl alcohol (TBA)), and lead scavengers (Pb Scavs). The groundwater results from this investigation are summarized in Table 2. Samples B-2 through B-5 contained TPH-g and/or MTBE.

Three soil borings, which were converted into monitoring wells MW-1 through MW-3, were drilled and installed at the approximate locations shown on Figure 2 on June 1, 2001 (PNEG, 2001b). Soil samples from the monitoring well borings were below the MDL for all analytes, with the exception of trace detections of BTEX constituents (Table 1). Groundwater samples were below the MDL except for the detection of MTBE in MW-2 at 120 ug/L and in MW-3 at 41 ug/L (Table 4).

Cone Penetrometer Test - 2002

A cone penetrometer test (CPT) investigation was performed at the site on June 25, 2002 to determine the depth of the next water bearing zone at the site (PNEG, 2002e). The CPT rig was able to push to a depth of 50 feet before refusal occurred. The CPT rig identified a very thin sand layer from 27.5 to 28.5 feet and then encountered a significant sand and gravel zone beginning at a depth

¹ PNEG merged with SCS Engineers in July 2003.

of 41.5 feet and continuing to the bottom of the hole. The CPT results were discussed with Dale Radford of the SCDHS, and a decision was made to install conductor casing in the deep well to 40 feet bgs and to screen the deep well in the major water bearing zone encountered from approximately 40 to 50 feet bgs.

Five additional monitoring wells, four shallow (MW-5 through MW-8), and one deep (MW-4D), were drilled and installed at the approximate locations shown on Figure 2 on July 1 and 2, 2002 (PNEG, 2002e). Soil samples were generally free of petroleum hydrocarbons except for trace concentrations of benzene, ethylbenzene, xylenes, and MTBE detected at a maximum concentration of 0.029 mg/kg. The results are summarized in Table 1.

Sensitive Receptor Survey

A Sensitive Receptor Survey (SRS) was conducted for the site in September 2000 in order to locate any petroleum vapor receptors, groundwater plume receptors, domestic wells, surface water features, and municipal wells within a one-half mile radius of the site located at 6100 Sebastopol Road (PNEG, 2000). A Department of Water Resources records search for all domestic, monitoring, and cathodic protection wells, within a one half mile radius of the site was also conducted.

Based on the results of the on-site and vicinity survey, no petroleum vapor receptors within 250 feet of the site were identified. In addition, based on the results of the records search and the on-site and vicinity survey no surface waters within 1,000 feet of the site were identified. Domestic wells within a one-half mile radius of the site are located as shown on Figure SRS.

Monitoring Well Installation - 2005

Four additional monitoring wells, three shallow (MW-11, MW-12, and MW-13), and one deep (MW-10D), were drilled, sampled and installed at the approximate locations shown on Figure 2 between January 19 and 31, 2005. The borings for the shallow monitoring wells were drilled using 8-inch diameter hollow stem augers and were converted into monitoring wells using 2-inch diameter Schedule 40 flush threaded PVC material. The screened interval in the monitoring wells consists of 0.010-inch, machine-slotted screen which extends from approximately 4.5-6 to 15-17 feet bgs. A #2/12 sand was used to create a filter pack around the screen and an approximate 1.5 to 2 foot bentonite seal was placed on top of the sand filter pack. The wells were completed to the surface with a cement seal. The PVC well casing in each monitoring well extends to within 6 inches bgs and is fitted with a waterproof locking cap. The wells are protected by traffic-rated, water-tight circular vaults. Additional well completion details are presented on the attached Well Completion Diagrams, Appendix B.

Based on the results of the previous drilling programs, soil samples were collected and examined for lithology from each of the borings beginning at an approximate depth of 5 feet bgs, and every 5 feet thereafter to a maximum depth of approximately 17.0 feet bgs. Two soil samples from each of the borings were submitted for analysis. The ends of the sample tubes selected for analysis were covered with Teflon® Tape and sealed with plastic caps. Soil samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody documentation to Analytical Sciences of Petaluma, California for analysis. AS is a California Department of Health Services certified laboratory for the analysis requested. Copies of AS' current certifications have been reviewed and are on file. The soil samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol.

The boring for the deep monitoring well was drilled using a combination of hollow stem augers and mud rotary to a maximum depth of 57 feet bgs. The hole was originally drilled to 40 feet using 14-inch diameter hollow stem augers. When attempting to set the conductor casing, the hole collapsed. Several attempts were made to clean out the hole and set the casing; however, the casing could not be advanced beyond approximately 30 feet. The hole was therefore later re-drilled to 40 feet by mud rotary methods and the casing was set to 40 feet. The conductor casing was then set and cemented in place in order to isolate the shallow water-bearing zone. The cement was allowed to cure around the casings after which the well was extended to a maximum depth of 60 feet bgs using 8-inch diameter hollow stem augers. The deep boring was converted into a monitoring well using 2-inch diameter Schedule 40 PVC blank well casing. The screened interval in the well consists of 0.010-inch machine-slotted screen, and extends from approximately 44.5 to 54.5 feet bgs (Appendix B). The well was installed with a #2/12 sand as a filter pack. The filter pack was brought to approximately 2 feet above the top of the screen, an approximate 12.5-foot bentonite seal was placed on top of the sand filter pack, and the well was completed to the surface with a cement seal. The PVC well casing extends to within 6 inches bgs and has been fitted with a waterproof locking cap. The well is protected by a traffic-rated, water-tight, circular vault. Additional well completion details are presented in Appendix B. In accordance with SCS' Work Plan (SCS, 2004d), no soil samples were collected for analysis from the deep boring.

The augers were pressure washed, and the small sampling equipment was washed in a detergent solution and rinsed. The drill cuttings were placed on and covered with plastic sheeting, pending disposal. The water generated by decontamination, well development, and sampling is stored at the site in steel 55-gallon UN/DOT-approved drums, pending disposal. Options for the disposal of the soil and groundwater are being evaluated.

Laboratory Analysis - Soil

Soil samples collected from the monitoring well borings were analyzed for TPH-g using EPA Method 8015M, and for BTEX, and the five ether-based oxygenates by EPA Method 8260B. Additionally, the sample collected from MW-12 at a depth of 7.0' was analyzed for lead for disposal purposes.

Well Development

Three of the four newly installed monitoring wells, MW-11 through MW-13, were developed on February 2, 2005 using a surge block and a submersible field portable groundwater purging pump. Due to a lack of water in the deep well, MW-10D, the field technician was unable to develop MW-10D sufficiently on February 2, 2005 and therefore returned to the site on March 21, 2005 at which time the field technician was able to sufficiently develop the well. Information obtained during well development was recorded on field sampling forms from which Well Development Records were generated, copies of which are presented in Appendix C.

1st Quarter 2005 Groundwater Monitoring and Sampling Event

Groundwater Monitoring

Depth to groundwater measurements were collected from each of the previously existing wells (MW-1 through MW-9) in addition to the newly installed wells (MW-10D through MW-13) on February 7, 2005. Depth to groundwater measurements in the shallow wells ranged from approximately 4 to 5.5 feet below existing ground surface (bgs). Depth to groundwater in MW-4D was 47.80 feet bgs. As discussed above, insufficient water was present in the well casing of MW-10D to obtain accurate water level conditions on February 2, 2005. The depth-to-groundwater measurements were combined with the well casing elevations to determine the groundwater flow direction and gradient. Casing and groundwater elevations are reported in feet relative to mean sea level. Depths to groundwater are expressed in feet. For the 1st quarter 2005 sampling event, the groundwater flow direction for the shallow wells was interpolated to be SSE at a calculated gradient of 0.006. A deep groundwater flow direction could not be calculated as only two deep wells are present, however, these two wells indicate a southerly component to the flow direction.

Groundwater Sampling

After the newly installed monitoring wells were developed, they were allowed to set for approximately 5 days prior to collecting depth to groundwater measurements. After depth to groundwater measurements were collected, each well was checked for the presence of free product by subjective evidence and using an oil/water interface probe. No free product was reported during this monitoring event, although the field technician reported a strong hydrocarbon odor in MW-9 during purging. Subsequent review of the information collected from MW-9 has indicated that the sample collected from MW-9 on February 7, 2005 consisted of free product. The wells were then purged of approximately 3 wetted well casing volumes of groundwater, or at least 5 gallons,

whichever was greater, or until they went dry, using either a submersible pump or a clean disposable bailer. Temperature, pH, conductivity, turbidity, and dissolved solids were measured during purging to help demonstrate that fresh groundwater was entering the well casing for sampling. Each well was allowed to recover prior to sampling. Groundwater samples were collected using a separate disposable bailer for each well, and were transferred into the appropriate containers supplied by the laboratory for analysis. The samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody to AS. All samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol. Information obtained during sampling was recorded on field sampling forms from which Well Purge Records were generated, copies of which are presented in Appendix C. The groundwater generated during the recent well sampling activities is stored at the site in 55-gallon UN/DOT-approved drums, pending disposal.

Well Survey

The tops of the new monitoring well casings were surveyed on March 9, 2005 under the supervision of a California licensed land surveyor to 0.01 feet to determine their elevations relative to mean sea level. A copy of the well survey report is presented in Appendix D. In addition, the latitude and longitude of the monitoring wells has been determined to within 1 meter. The surveyed monitoring well elevations and monitoring well locations will be submitted electronically to the State Department of Water Resources Geotracker database.

Laboratory Analysis

The groundwater samples collected and submitted for analysis from the previously existing and newly installed wells were analyzed for TPH-g by EPA Method 5030/8015M, and for BTEX and MTBE by EPA Method 8020.

Soil Analytical Results

TPH-g was detected at a concentration of 68 mg/kg in the MW-12@7.0' sample; BTEX constituents were detected at concentrations of 0.15 mg/kg benzene, 1.1 mg/kg ethylbenzene, and 5.5 mg/kg xylenes in the MW-12@7.0' sample, and ethylbenzene at a concentration of 0.0024 mg/kg in the MW-11@6.0' sample and 0.0021 mg/kg in the MW-12@11.0' sample. Lead (Pb) was detected at a concentration of 3.8 mg/kg in the MW-12@7.0' sample. The additional target analytes were not detected above the laboratory report detection limit (RDL) in any of the other samples. Soil analytical results for TPH-g are contoured on Figures 7 and 8 and are summarized in Table 5.

2nd Quarter 2005 Groundwater Monitoring and Sampling Event

Groundwater Monitoring

Depth to groundwater measurements were collected from each of the project monitoring wells (MW-1 through MW-13) on May 5, 2005. Depth to groundwater measurements in the shallow wells ranged from approximately 3 to 5 feet bgs. Depth to groundwater in MW-4D was 46.49 feet bgs and in MW-10D was 46.19 feet bgs. The depth-to-groundwater measurements for the shallow wells were combined with the well casing elevations to determine the groundwater flow direction and gradient. Casing and groundwater elevations are reported in feet relative to mean sea level. Depths to groundwater are expressed in feet. For the 2nd Quarter 2005 sampling event, the shallow groundwater flow direction (excluding MW-3 for which the depth to groundwater measurement appeared to be anomalous) for the shallow wells was interpolated to be SSE at a calculated gradient of 0.009. A deep groundwater flow direction could not be calculated as only two deep wells are present, however, these two wells indicate a southerly component to the flow direction.

Groundwater Sampling

After depth to groundwater measurements were collected, each well was checked for the presence of free product by subjective evidence and using an oil/water interface probe. The field technician reported the presence of free product in MW-9 and the well was not sampled during this sampling event. The wells were then purged of approximately 3 wetted well casing volumes of groundwater, or at least 5 gallons, whichever was greater, or until they went dry, using a submersible pump. Temperature, pH, conductivity, turbidity, and dissolved oxygen were measured during purging to help demonstrate that fresh groundwater was entering the well casing for sampling. Each well was allowed to recover prior to sampling. Groundwater samples were collected using a separate disposable bailer for each well, and were transferred into the appropriate containers supplied by the laboratory for analysis. The samples were labeled, stored under refrigerated conditions, and transported under Chain-of-Custody to AS. All samples were collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol. Information obtained during sampling was recorded on field sampling forms from which Well Purge Records were generated, copies of which are presented in Appendix C. The groundwater generated during the recent well sampling activities is stored at the site in 55-gallon UN/DOT-approved drums, pending disposal.

Laboratory Analysis

The groundwater samples collected and submitted for analysis from the 2nd Quarter 2005 sampling event were analyzed for TPH-g by EPA Method 5030/8015M, and for BTEX and MTBE by EPA Method 8020.

Site Conceptual Model Geology and Hydrology

The Site is situated within the Santa Rosa Plain which consists primarily of silts, sands, and clays associated with alluvial and lacustrine deposits. The lithologic information generated from drilling programs at the site indicates a thin layer of baserock (fill material) which is approximately 1-2 feet thick and distributed across the majority of the site. This fill layer is underlain by a thin clay layer which is present at depths ranging from approximately 2 to 6 feet bgs, underlain by a layer of silty sands, sandy silts, and silty sands with gravel which extend to depths ranging from approximately 5 to 15 feet bgs. This lithologic unit is the water-producing unit into which the shallow monitoring wells at the site are screened. This layer is underlain by a clay layer which extends down to an approximate depth of 40 feet bgs, at which point silty sands, sandy silts, and silty sands with gravel have been identified to the maximum depth explored of approximately 60 feet bgs. This layer is the lithologic unit into which the deep monitoring wells at the site are screened (Figure 9, Geologic Section A-A').

The shallow groundwater at the site has ranged from depths of approximately 2.5 to 9 feet bgs. The shallow groundwater flow direction at the site has been primarily south/southeasterly at gradients ranging from 0.003 to 0.01 (Figure 3 and Table 4). The groundwater levels in MW-4D and MW-10D range from approximately 42 to 48 feet bgs and indicate a southerly component to the flow direction.

Discussion – Initial Sampling of New Wells (1st Quarter 2005)

TPH-g was detected in each of the groundwater samples collected from the newly installed wells (MW-10D, MW-11, MW-12 and MW-13) at concentrations of 6,000 ug/L, 17,000 ug/L, 33,000 ug/L, and 240 ug/L, respectively. BTEX constituents were detected in each of the newly installed wells at concentrations ranging from 5.1 ug/L benzene in MW-10D to 3,300 ug/L xylenes in MW-12. MTBE was detected in the samples collected from MW-10D, MW-11, and MW-12 at concentrations of 42 ug/L, 130 ug/L, and 270 ug/L, respectively, and was below the laboratory RDL (2.5 ug/L) in the sample collected from MW-13. The groundwater analytical results from the previously existing wells (MW-1 through MW-9) were generally consistent with those from previous events with a TPH-g impact concentrated in the vicinity of MW-5 and MW-9 adjacent to the former gasoline UST, and a more widespread groundwater impact by MTBE (Figures 4 and 6). For the February 7, 2005 sampling event, TPH-g was detected at concentrations ranging from 87

ug/L in MW-3 to 280,000 ug/L in MW-9; BTEX constituents at concentrations ranging from 0.55 ug/L benzene in MW-4D to 28,000 ug/L xylenes in MW-9, and MTBE at concentrations ranging from 3.1 ug/L in MW-2 to 1,400 ug/L in MW-9. Based on conversations with the field technician, the sample collected from MW-9 appears to have at least partially consisted of free product, and as such, a confirmation sample was collected from MW-9 on March 21, 2005. The sample collected on March 21, 2005 contained TPH-g at a concentration of 65,000 ug/L, BTEX constituents at a maximum concentration of 3,700 ug/L benzene, and MTBE at a concentration of 23 ug/L.

Discussion – 2nd Quarter 2005

The results of the May 5, 2005 sampling event are generally consistent with those from previous sampling events at the site. TPH-g, BTEX constituents, and MTBE continue to be detected in groundwater beneath the site. The distribution of the site contaminants is illustrated on Figures 4 through 6c. Contaminant concentrations and groundwater elevations versus time are plotted on Diagrams A and B.

The TPH-g concentration data for well MW-10D collected from the second sampling event was approximately half (3,200 µ/L) of the concentration reported during this initial sampling event (6,000 µ/L). The elevated detections may be attributed to problems encountered during the installation of the well when the borehole caved in during the setting of the conductor casing. Additional sampling of this well will assist in evaluating the actual concentrations of TPH-g in the deeper water-bearing zone.

Recommendations

The extent of soil impact at the site appears to be generally assessed (Figures 7, 8, and 9). As indicated on Figures 4 through 6c, the vertical and horizontal extent of the groundwater impact beneath the site has not been assessed adequately enough to evaluate site remediation options. Additional monitoring points to the south/southwest of MW-12 and to the south/southeast of MW-11 would be necessary to provide further plume assessment. SCS contacted the SCDHS on March 3, 2005 in order to discuss proposing additional shallow and deep monitoring wells at the site. Mr. Radford concurred with SCS' recommendation that a proposal for additional monitoring points be included in this report (SCDHS, 2005). The proposal is detailed in the following work plan.

Work Plan for Additional Subsurface Investigation

Proposed Shallow Monitoring Wells

SCS proposes to drill six borings, three of which will be shallow, and three of which will be deep, for conversion into monitoring wells at the approximate locations shown on Figures 4 through 6. The borings for the shallow monitoring wells will be drilled to further evaluate the lateral extent of impacted shallow groundwater at the site. The shallow borings will be drilled using either 8-inch or 9-inch diameter hollow stem augers and will be converted into monitoring wells using 2-inch diameter Schedule 40 flush-threaded PVC material. The screened interval in the monitoring wells will consist of 0.010-inch machine-slotted screen and will extend from approximately 5 to 20 feet bgs. The anticipated depth of each boring is approximately 20 feet, with 15 feet of screen in each well. A #2/12 sand or its equivalent will be used to create a filter pack around the screen. The filter pack will be brought to approximately 1 foot above the top of the screen, an approximate 1-foot bentonite seal will be placed on top of the sand filter pack, and the wells will be completed to the surface with a cement seal. Additional well completion details are presented on Figure W.

The PVC well casing in each monitoring well will extend to within 6 inches bgs and will be fitted with a waterproof locking cap. The wells will be protected by traffic-rated, water-tight circular vaults installed approximately 1/2-inch above grade.

Based on the results of the previous drilling programs, soil samples will be collected and examined for lithology from each of the borings beginning at an approximate depth of 5 feet bgs, and every 5 feet thereafter to a maximum depth of approximately 20 feet bgs. Based on the results of past drilling programs at the site, SCS anticipates collecting approximately two soil samples from each of the borings for analysis (5 feet and 10 feet). The soil samples will be collected following Standard Soil and Water Sampling Procedures and QA/QC Protocol and submitted to a California Department of Health Services certified analytical laboratory for the appropriate analysis. Chain-of-Custody documentation will be maintained at all times.

Proposed Deep Monitoring Wells

SCS also proposes to drill, sample, and install three deep monitoring wells to provide additional vertical plume assessment and groundwater monitoring at the approximate locations shown on Figure 4. The deep wells will be drilled to a depth of 20 feet and a conductor casing will be set and cemented in place. After the cement has cured around the conductor casing, the well will be extended to a depth currently estimated at 55 feet and screened. The well will be completed in the same manner as the shallow wells with 2-inch PVC casing and screened from approximately 45 to 55 feet bgs. A typical well completion diagram for the deep wells is presented on Figure WC. The

deep wells will be drilled with appropriate available equipment. Typical borehole diameter for the conductor casing may range from 12 to 16 inches, while the conductor casing is typically 8 to 10 inches in diameter. No soil samples are proposed for analysis from the deep well borings as each of the proposed deep monitoring wells will be adjacent to a shallow well for which soil sampling has been proposed or previously collected.

The drilling and sampling equipment will be pressure washed, and detergent washed and rinsed, to prevent cross contamination between borings. The drill cuttings will be placed on and covered with plastic sheeting, pending disposal. The water generated by decontamination, well development, and sampling will be stored at the site in steel 55-gallon UN/DOT-approved drums, pending disposal. Options for the disposal of the soil and groundwater will be evaluated once the soil and groundwater analytical results have been reported. Disposal options may include additional sampling of both soil and groundwater prior to acceptance for disposal.

Well Development, Sampling, and Reporting

The monitoring wells will be developed approximately 1 to 3 days after construction. The wells will be developed by using a surge block and a submersible field portable, groundwater purging pump. The wells will be pumped then surged for approximately 35 to 40 strokes to set the filter pack, followed by pumping of the wells until either they go dry or the drilling process water is deemed to have been removed (approximately five wetted well casing volumes). If a well goes dry during pumping but before the calculated amount of water has been extracted, this will be deemed adequate to have removed all the drilling process water.

After development, the wells will be allowed to stabilize for at least one day prior to measuring groundwater levels. The wells will be opened and the groundwater levels will be measured. The wells will be allowed to remain open for 5 to 10 minutes after which the water levels will be measured again. This process will continue until stable readings are obtained in the wells (± 0.02 feet in each well). After the wells have stabilized and water level measurements have been made, the wells will be pumped or bailed until approximately 3 to 5 wetted well casing volumes, or at least 5 gallons of groundwater have been removed, whichever is greater, or until the well goes dry, and until successive measurements of pH, temperature, conductivity, turbidity, and dissolved solids/oxygen have generally stabilized ($\pm 10\%$ of the prior reading). Measurements will be taken at regular intervals during purging. After purging is completed, the wells will be sampled in the order purged. This sequence will allow for maximum recovery, anticipated to be at least 80% of their original well volume. In high permeability areas, recovery typically approaches 100%. If a well remains dry after purging, it will be allowed to remain open for at least one hour after which an attempt will be made to sample the well. If the well is still dry, an attempt will be made to sample the well on the next day. If the well still has not recovered, the well will be sampled during the next visit to the site by the sampler. This may not occur until the next quarterly monitoring event.

Pre-purge samples will be collected from any well which previously purged dry and did not recover within one hour for sampling. If the well can be purged and sampled during the next scheduled sampling event, the pre-purge sample will be discarded, otherwise, the pre-purge sample will be submitted for analysis. Groundwater samples will then be obtained for laboratory chemical analysis, using a separate disposable bailer for each well, and transferred to the appropriate containers supplied by the laboratory. The water generated by development and sampling will be stored at the site in 55-gallon UN/DOT-approved drums, pending disposal.

The newly installed monitoring wells will be sampled initially and the results presented in a report of investigation. The wells will then be included with the quarterly monitoring program which is in progress at the site. Analytical results will be evaluated after each sampling event to consider the need for additional investigation. A copy of SCS' Standard Soil and Water Sampling Procedures and QA/QC Protocol is attached.

Well Survey

The top of each new monitoring well casing will be surveyed under the supervision of a California licensed surveyor or a licensed civil engineer with surveying experience to 0.01 feet to determine its elevation relative to mean sea level. In addition, the latitude and longitude of each monitoring well will be determined to within 1 meter. The surveyed monitoring well elevations and monitoring well locations will be submitted electronically to the State Department of Water Resources Geotracker database.

Laboratory Analysis

The soil and groundwater samples collected and submitted for analysis during this investigation will be analyzed for TPH-g by EPA Method 8015M, and for BTEX and MTBE by EPA Method 8020.

Closure

The work proposed herein will be performed upon receipt of SCDHS approval, and upon receipt of the necessary drilling permits and access agreements for work plan implementation. If pre-approval by the USTCF is re-instituted before the drilling event occurs, pre-approval will be requested prior to drilling.

Attachments
File No. 01203340.00

Figures

Figure 1:	Site Location Map
Figure 2:	Site Plan
Figure 3:	Site Plan - Groundwater Flow Direction and Gradient for 02/07/05
Figure 3A:	Groundwater Flow Direction and Gradient for 05/05/05
Figure 4:	Isoconcentration Map - TPH-g in Shallow Wells for 02/07/05 and Proposed Monitoring Well Locations
Figure 4A:	Isoconcentration Map – TPH-g in Deep Wells for 02/07/05
Figure 4B:	Isoconcentration Map - TPH-g in Shallow Wells for 05/05/05
Figure 4C:	Isoconcentration Map – TPH-g in Deep Wells for 05/05/05
Figure 5:	Isoconcentration Map – Benzene in Shallow Wells for 02/07/05
Figure 5A:	Isoconcentration Map – Benzene in Deep Wells for 02/07/05
Figure 5B:	Isoconcentration Map – Benzene in Shallow Wells for 05/05/05
Figure 5C:	Isoconcentration Map – Benzene in Deep Wells for 05/05/05
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Diagrams and Tables

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Table 2:	Soil Boring Analytical Results (Groundwater)
Table 3:	Soil Boring Analytical Results – 2005
Table 4:	Groundwater Flow Direction and Gradient
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Appendices

Appendix A

Unified Soil Classification System Chart and Boring Log Legend

Boring Logs for MW-10D through MW-13

DWR 188 Forms for MW-10D through MW-13

Appendix B

Well Completion Diagrams for MW-10D through MW-13

Appendix C

Well Development Records for February 2 and March 21, 2005

Well Purge Records for February 7, March 21, and May 5, 2005

Appendix D

Well Survey Report dated March 9, 2005

Appendix E

Analytical Sciences Report #5012106 dated January 31, 2005

Analytical Sciences Report #5020801 dated February 28, 2005

Analytical Sciences Report #5032804 dated April 8, 2005

Analytical Sciences Report #5050903 dated May 20, 2005

Appendix F

Soil and Water Sampling Procedures and QA/QC Protocol

Reference List

File No. 01203340.00

- PNEG, 1998. Work Plan for Soil and Groundwater Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, January 29.
- PNEG, 1999. Report on Soil and Groundwater Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, November 15.
- PNEG, 2000. Sensitive Site Receptor Survey for 6100 Sebastopol Road, Sebastopol, California October 3.
- PNEG, 2001a. Work Plan for Soil and Groundwater Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, January 24.
- PNEG, 2001b. Report of Investigation for Soil and Groundwater at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, August 22.
- PNEG, 2001c. Results of the 3rd Quarter 2001 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, October 25.
- PNEG, 2002a. Work Plan for Additional Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, January 10.
- PNEG, 2002b. Results of the 4th Quarter 2001 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, February 6.
- PNEG, 2002c. Results of the 1st Quarter 2002 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, April 29.

- PNEG, 2002d. Results of the 2nd Quarter 2002 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, July 29.
- PNEG, 2002e. Report on Additional Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, September 27.
- PNEG, 2003a. Results of the 4th Quarter 2002 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, January 7.
- PNEG, 2003b. Work Plan for Removal of Underground Storage Tank at 6100 Sebastopol Road, Sebastopol, California, February 14.
- PNEG, 2003c. Results of the 1st Quarter 2003 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, March 17.
- SCDHS, 1998. Unauthorized Release Report, September 16.
- SCDHS, 2004a. Concurrence with recommendation for work plan from D. Radford to W. Thompson, September 10.
- SCDHS, 2004b. Work plan approval from D. Radford to W. Thompson, November 4.
- SCDHS, 2005. Personal communication between D. Radford and K. Coker concurring with inclusion of work plan, March 3.
- SCS, 2003a. Results of the 2nd Quarter 2003 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, July 24.
- SCS, 2003b. Report on Additional Monitoring Well Installation and 3rd Quarter 2003 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, November 11.
- SCS, 2003c. Report on Drilling and Sampling of Slant Borings and the Abandonment In-Place of One Underground Storage Tank at Weeks Drilling and Pump, Inc. - 6100 Sebastopol Road, Sebastopol, California, November 12.
- SCS, 2004a. Results of the 4th Quarter 2003 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, January 16.
- SCS, 2004b. Results of the 1st Quarter 2004 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, April 15.
- SCS, 2004c. Results of the 2nd Quarter 2004 Groundwater Monitoring and Sampling Event at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, September 1.
- SCS, 2004d. Work Plan for Additional Subsurface Investigation at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, October 11.
- SCS, 2004e. Results of the 3rd and 4th Quarter 2004 Groundwater Monitoring and Sampling Events at Weeks Drilling and Pump - 6100 Sebastopol Road, Sebastopol, California, December 27.

Mr. Dale Radford

9 June 2005

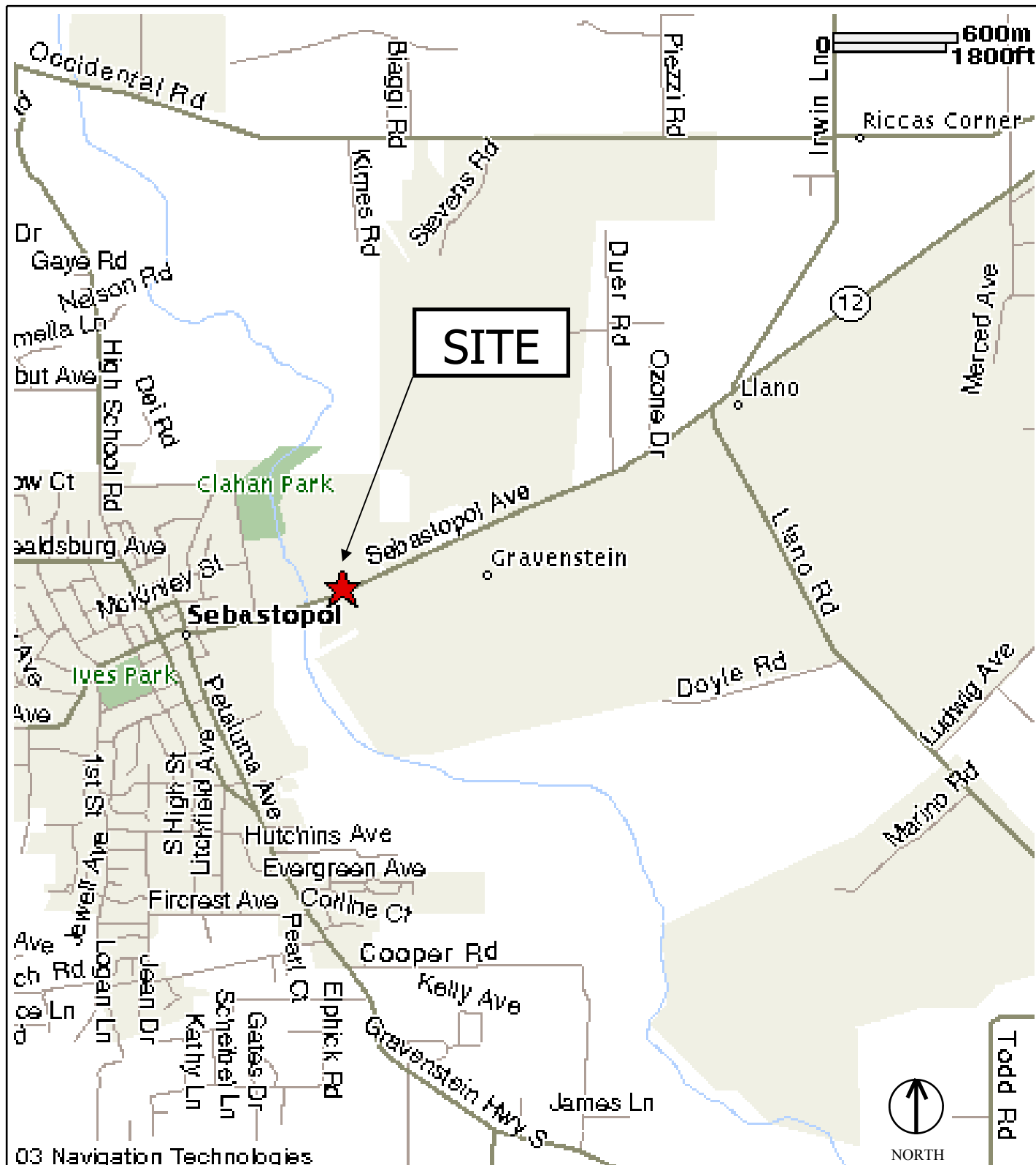
Page 16

Distribution List
File No. 01203340.00

Mr. Ward Thompson
Weeks Drilling and Pump
6100 Sebastopol Road
Sebastopol, California 95472

Mr. Luis Rivera
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403

Figures



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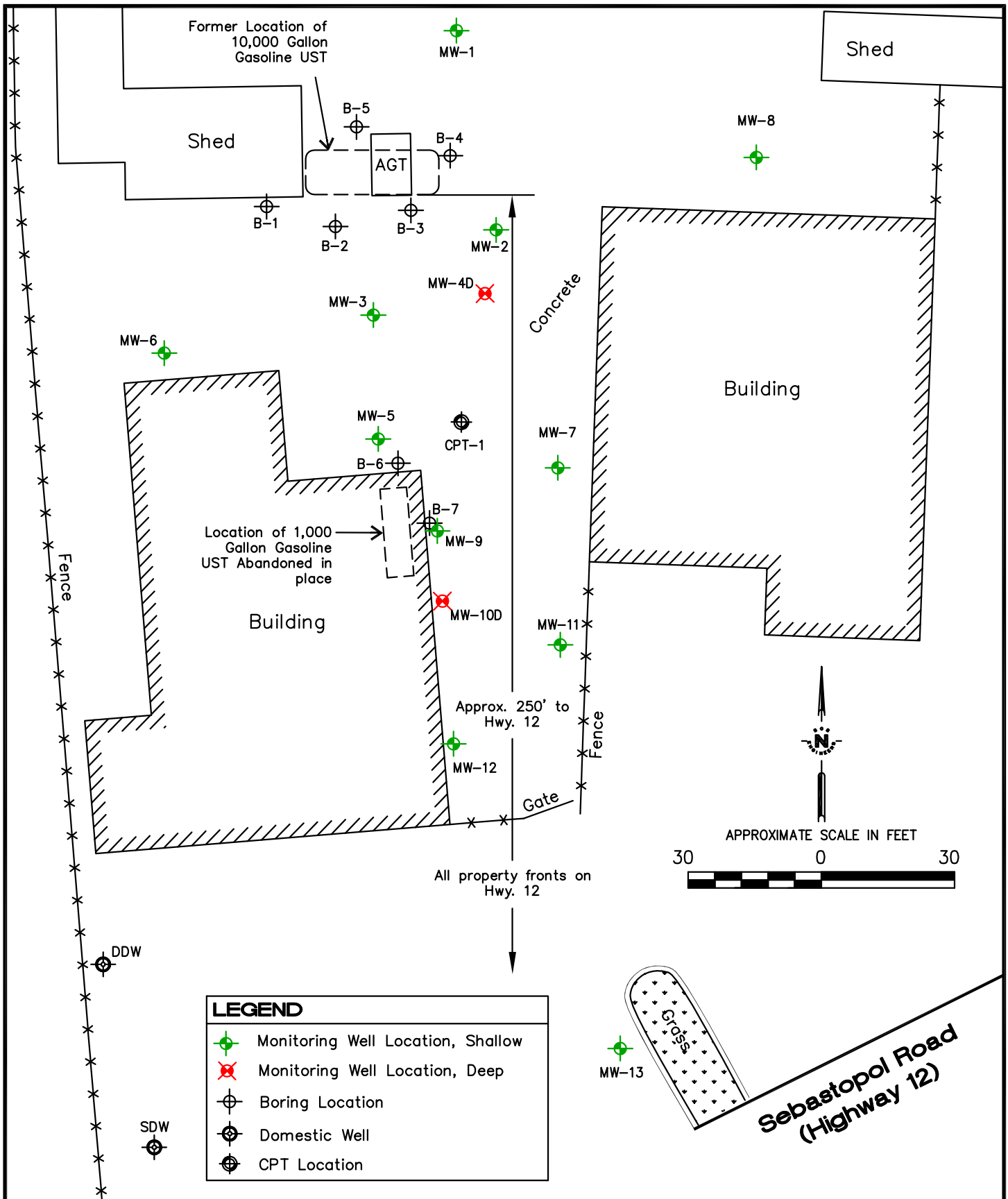
3645 WESTWIND BOULEVARD
SANTA ROSA, CALIFORNIA
PH: (707) 546-9461 FX: (707) 544-5769

SITE LOCATION MAP

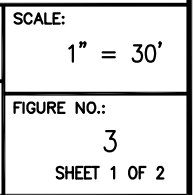
Weeks Drilling and Pump
6100 Sebastopol Road (Highway 12)
Sebastopol, California

Figure
1

Drawn by: MRO	File Name: SiteLoc_10-03	Job Number: 01203340.00	Date: October 31, 2003
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SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3645 WESTWIND BOULEVARD SANTA ROSA, CALIFORNIA 95403 PH. (707) 546-9461 FAX. (707) 544-5769			SHEET TITLE: SITE PLAN		SCALE: 1" = 30'
PROJECT TITLE: WEEKS DRILLING AND PUMP COMPANY, INC. 6100 SEBASTOPOL ROAD (HWY. 12) SEBASTOPOL, CALIFORNIA			FIGURE NO.: 2		
PROJ. NO.: 3340.00	DWN. BY: AJH	ACAD FILE: 3340.00-SP2-3468r1			
DATE: 5/27/05	CHK. BY:	APP. BY: SK			



GROUNDWATER FLOW LEGEND

Estimated Groundwater
Flow Direction



Gradient Contour
(Interval = 0.5 ft)



Identifier
Tag

Date

Est. Flow
Direction

Gradient
Slope



MW-n Monitoring Well Location
[xx.xx] Groundwater Elevation

Notes:

Groundwater elevations are in feet
above mean sea level (National
Geodetic Vertical Datum, 1929).



Domestic Well



CPT Location



Fencing

Identifier
Tag

Date

Est. Flow
Direction

Gradient
Slope

(A)

6/6/01

S25°E

i = 0.003

(B)

9/13/01

S5°E

i = 0.003

(C)

12/13/01

S25°E

i = 0.005

(D)

2/21/02

Not
Calculated

Not
Calculated

(E)

5/21/02

Not
Calculated

Not
Calculated

(F)

8/19/02

Southerly

i = 0.003

(G)

11/27/02

SE

i = 0.005

(H)

2/27/03

Southerly

i = 0.007

(I)

6/6/03

Southerly

i = 0.007

(J)

9/16/03

Southerly

i = 0.006

(K)

12/10/03

Southerly

i = 0.01

(L)

3/15/04

Southerly

i = 0.007

(M)

6/29/04

Southerly

i = 0.005

(N)

9/22/04

SSE

i = 0.003

(O)

11/12/04

SSE

i = 0.008

(P)

2/07/05

SSE

i = 0.006

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PROJ. NO.: 3340.00	DWN. BY: AJH	ACAD FILE: 3340.00-GW.P-3468r1
DATE: 5/27/05	CHK. BY:	APP. BY: SK

SHEET TITLE:

SITE PLAN

GROUNDWATER FLOW DIRECTION AND GRADIENT FOR 2/07/05

PROJECT TITLE:

WEEKS DRILLING AND PUMP COMPANY, INC.
6100 SEBASTOPOL ROAD (HWY. 12)
SEBASTOPOL, CALIFORNIA

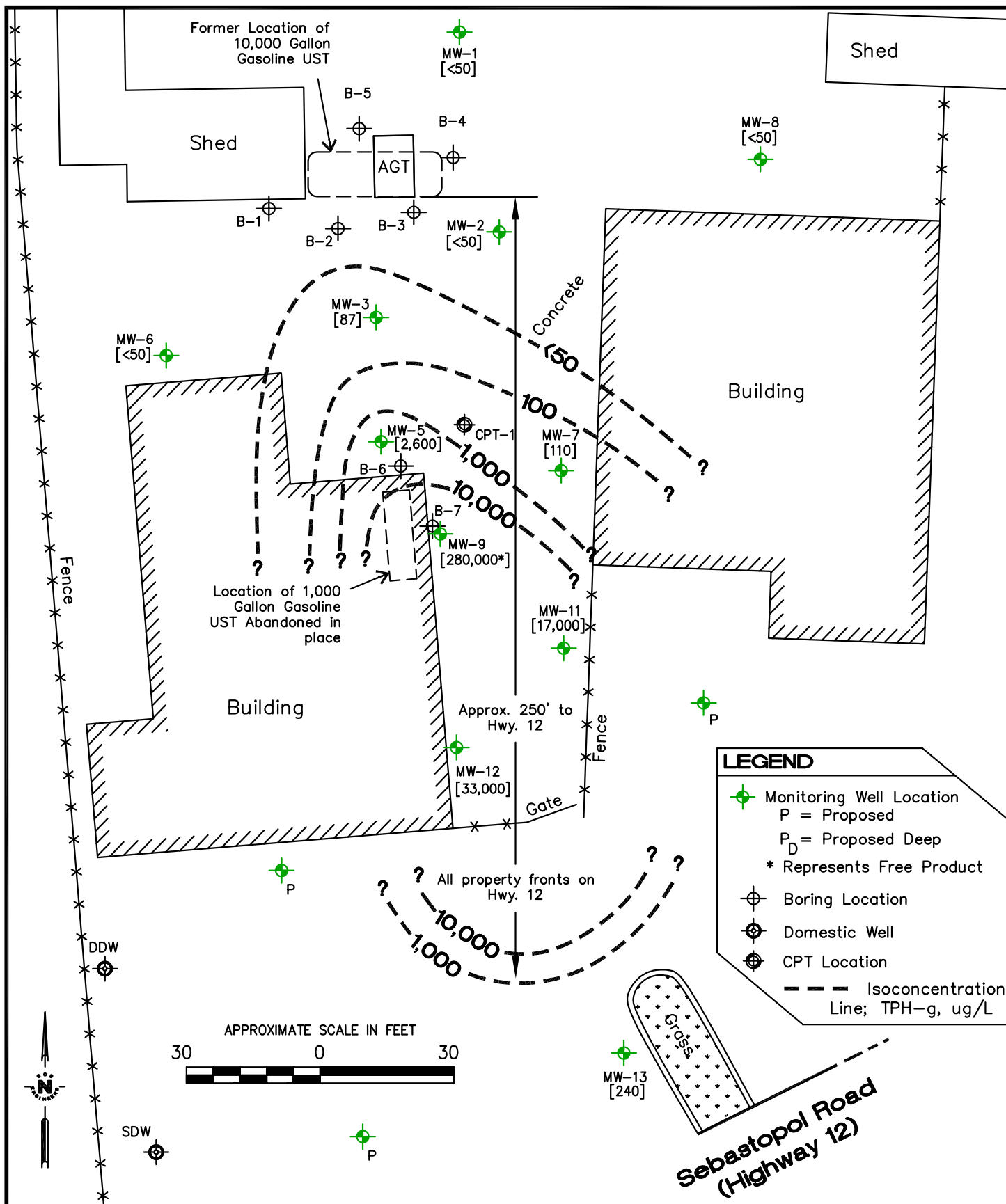
SCALE:

1" = 30'

FIGURE NO.:

3

SHEET 2 OF 2



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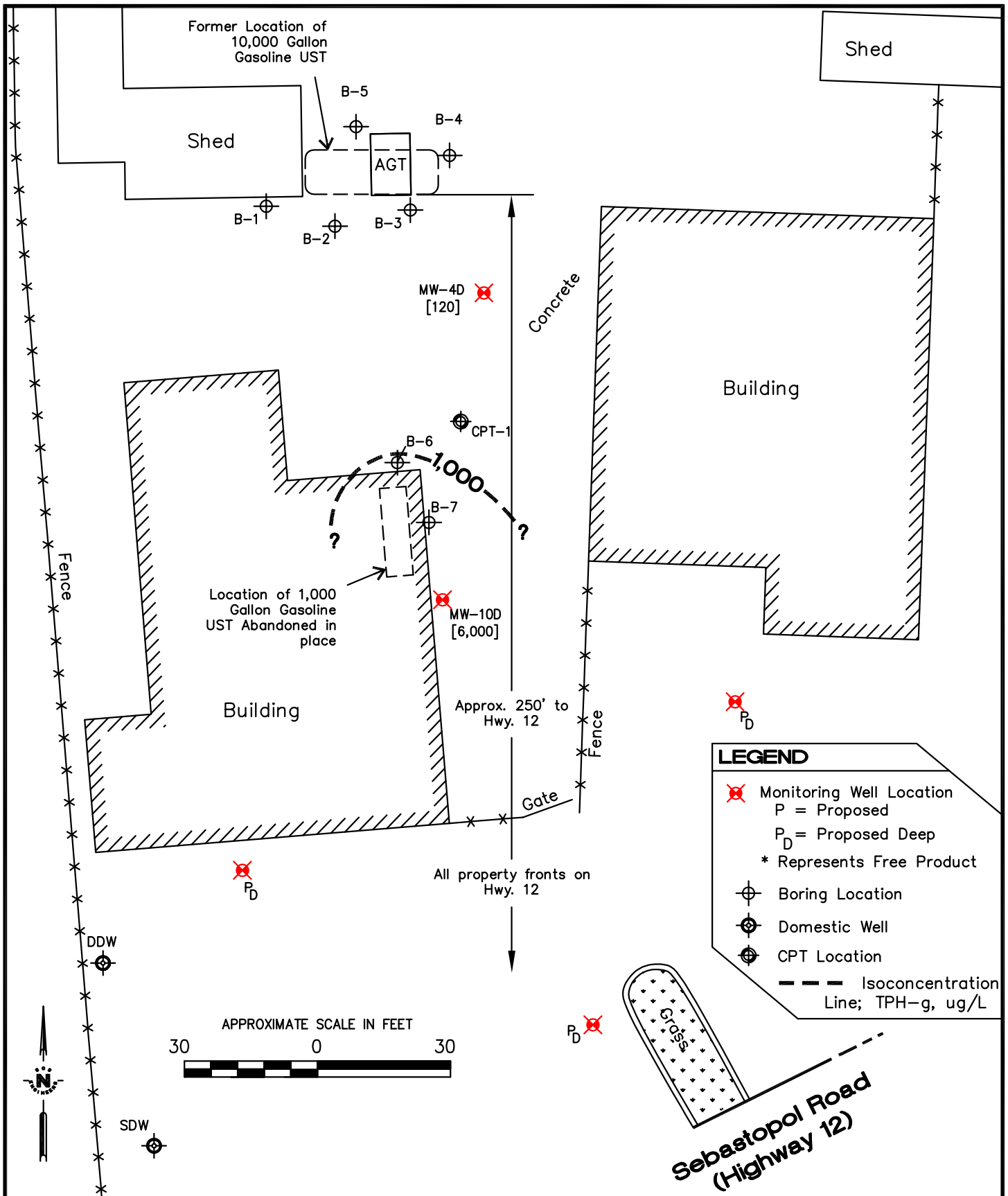
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FOR 2/7/05, AND PROPOSED MW LOCATIONS

PROJECT TITLE: WEEKS DRILLING AND PUMP COMPANY, INC.
6100 SEBASTOPOL ROAD (HWY. 12)
SEBASTOPOL, CALIFORNIA

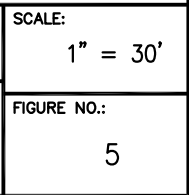
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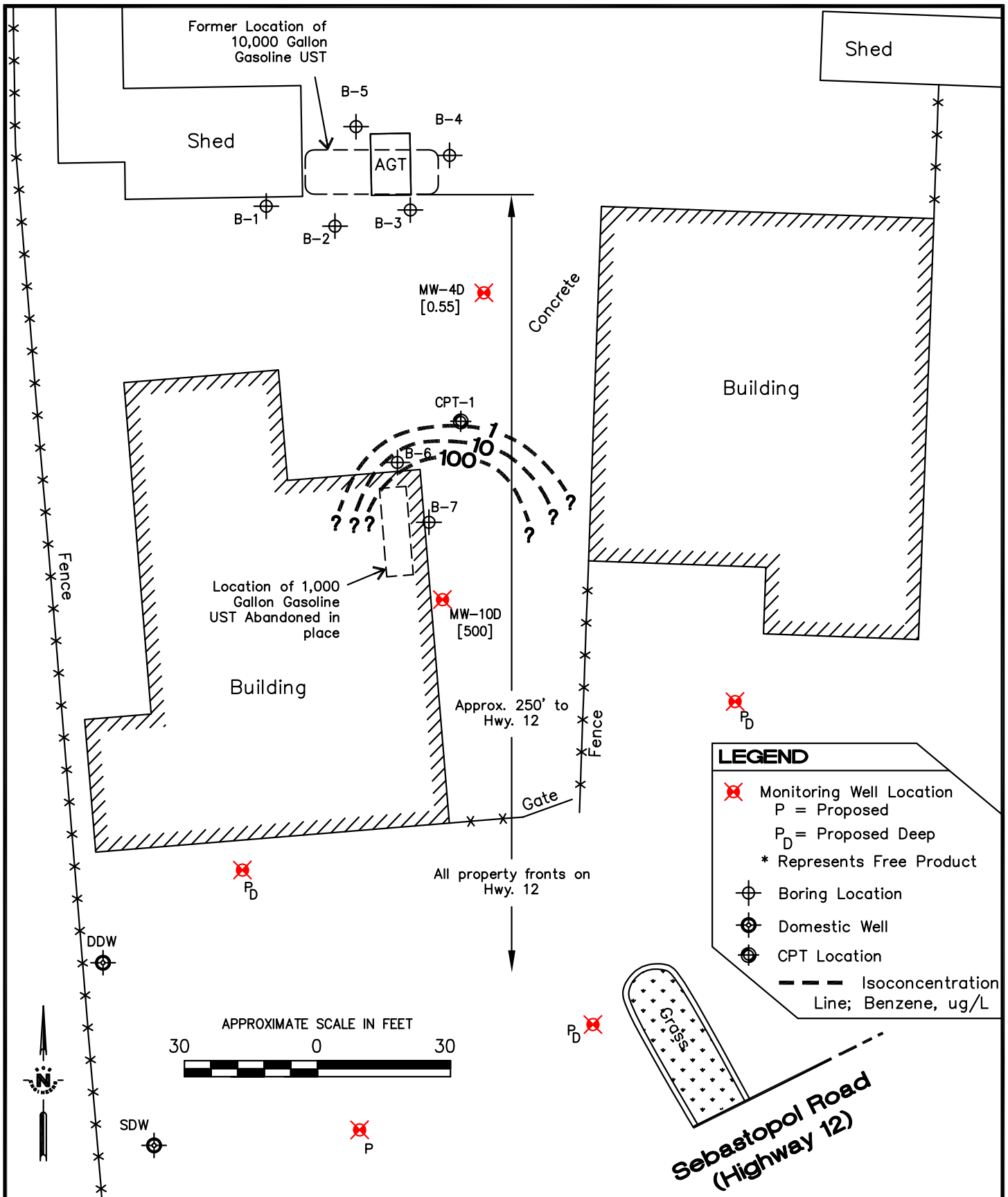
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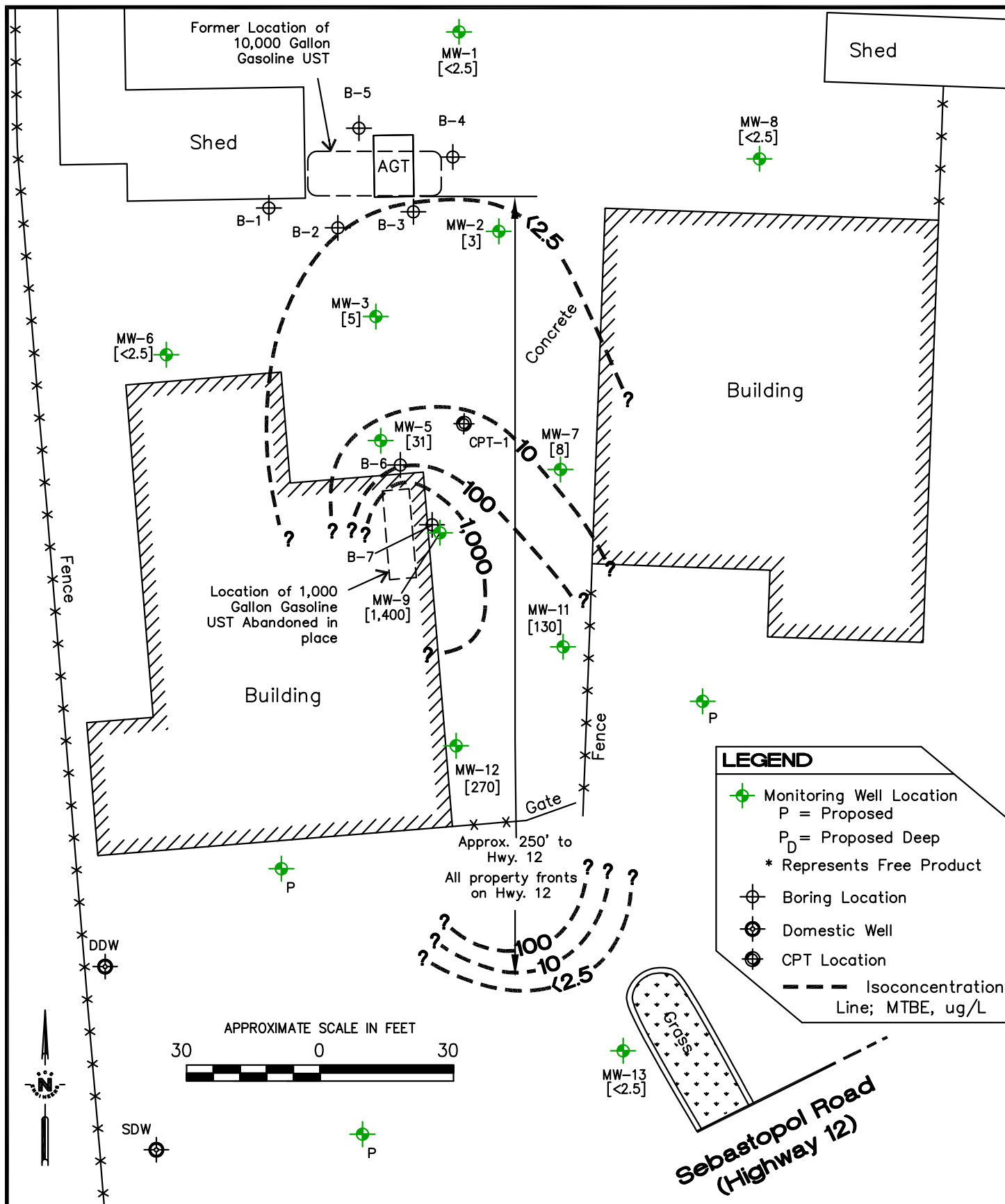


<div>SCS ENGINEERS</div> <div>ENVIRONMENTAL CONSULTANTS</div> <div>3645 WESTWIND BOULEVARD SANTA ROSA, CALIFORNIA 95403 PH. (707) 546-9461 FAX. (707) 544-5769</div>			<div>SHEET TITLE:</div> <div>ISOCONCENTRATION MAP TPH-g IN DEEP WELLS FOR 2/7/05</div>		<div>SCALE:</div> <div>1" = 30'</div>
<div>PROJ. NO.: 3340.00</div> <div>DATE: 5/27/05</div>			<div>PROJECT TITLE:</div> <div>WEEKS DRILLING AND PUMP COMPANY, INC. 6100 SEBASTOPOL ROAD (HWY. 12) SEBASTOPOL, CALIFORNIA</div>		<div>FIGURE NO.:</div> <div>4A</div>
<div>DWN. BY:</div> <div>CHK. BY:</div>	<div>AJH</div> <div></div>	<div>ACAD FILE:</div> <div>APP. BY:</div>	<div>3340.00-IS04A-3468r1</div> <div>SK</div>		





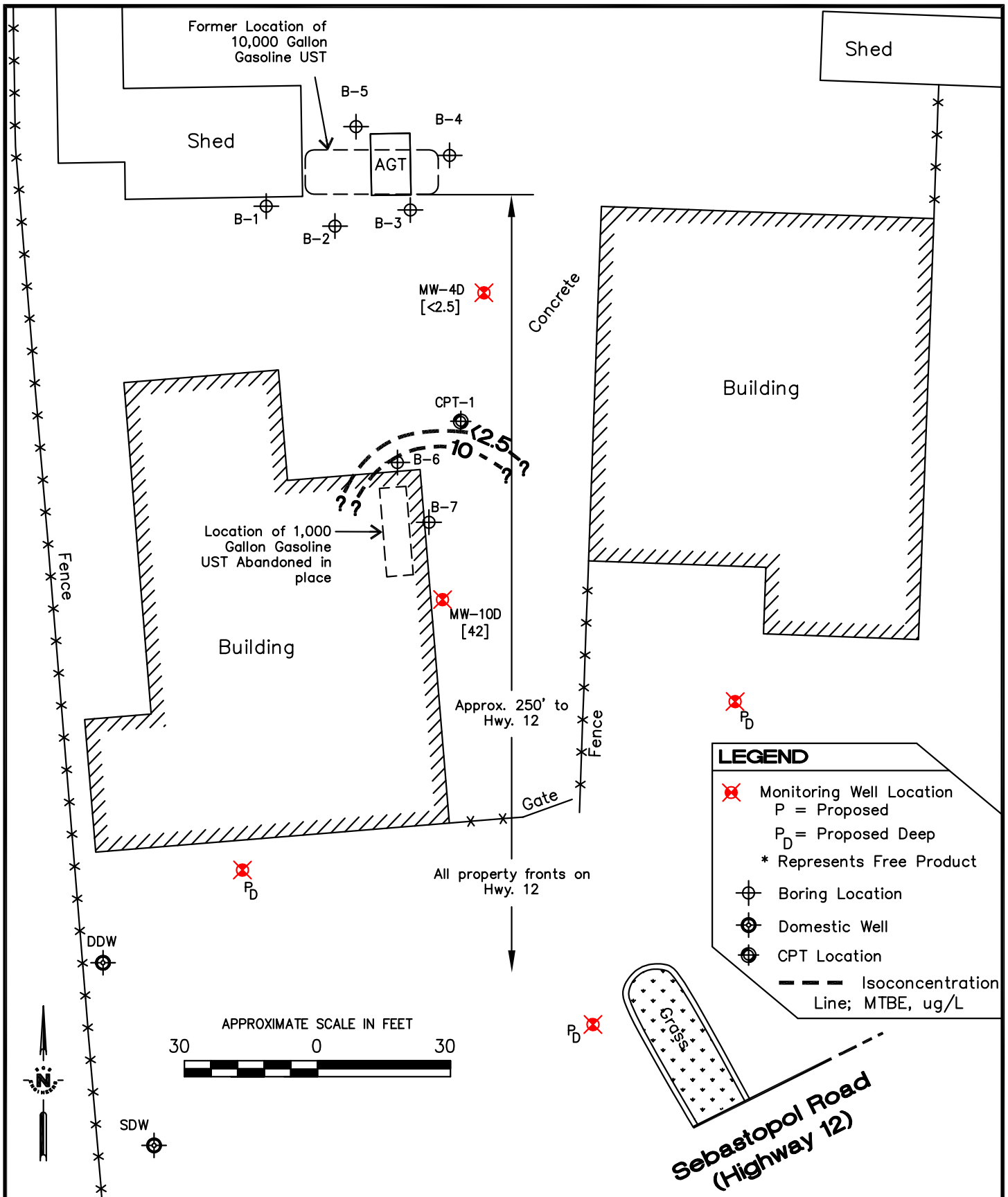
SCS ENGINEERS			SHEET TITLE:		ISOCONCENTRATION MAP	SCALE:
ENVIRONMENTAL CONSULTANTS					BENZENE IN DEEP WELLS FOR 2/7/05	1" = 30'
3645 WESTWIND BOULEVARD			PROJECT TITLE:		WEEKS DRILLING AND PUMP COMPANY, INC.	FIGURE NO.:
SANTA ROSA, CALIFORNIA 95403					6100 SEBASTOPOL ROAD (HWY. 12)	
PH. (707) 546-9461 FAX. (707) 544-5769					SEBASTOPOL, CALIFORNIA	5A
PROJ. NO.:	3340.00	DWN. BY:	AJH	ACAD FILE:	3340.00-IS05A-3468r1	
DATE:	5/27/05	CHK. BY:		APP. BY:	SK	



LEGEND

- Monitoring Well Location
- P = Proposed
- P_D = Proposed Deep
- * Represents Free Product
- Boring Location
- Domestic Well
- CPT Location
- Isoconcentration Line; MTBE, ug/L

SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3645 WESTWIND BOULEVARD SANTA ROSA, CALIFORNIA 95403 PH. (707) 546-9461 FAX. (707) 544-5769			SHEET TITLE: ISOCONCENTRATION MAP MTBE IN SHALLOW WELLS FOR 2/7/05		SCALE: 1" = 30'
PROJECT TITLE: WEEKS DRILLING AND PUMP COMPANY, INC. 6100 SEBASTOPOL ROAD (HWY. 12) SEBASTOPOL, CALIFORNIA			FIGURE NO.: 6		
PROJ. NO.: 3340.00 DATE: 5/27/05	DWN. BY: AJH CHK. BY:	ACAD FILE: 3340.00-IS06-3468r1 APP. BY: SK			



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SANTA ROSA, CALIFORNIA 95403
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PROJ. NO.: 3340.00 DWN. BY: AJH ACAD. FILE: 3340.00-IS06A-3468r1
DATE: 5/27/05 CHK. BY: APP. BY: SK

SHEET TITLE:

ISOCONCENTRATION MAP
MTBE IN DEEP WELLS FOR 2/7/05

PROJECT TITLE:

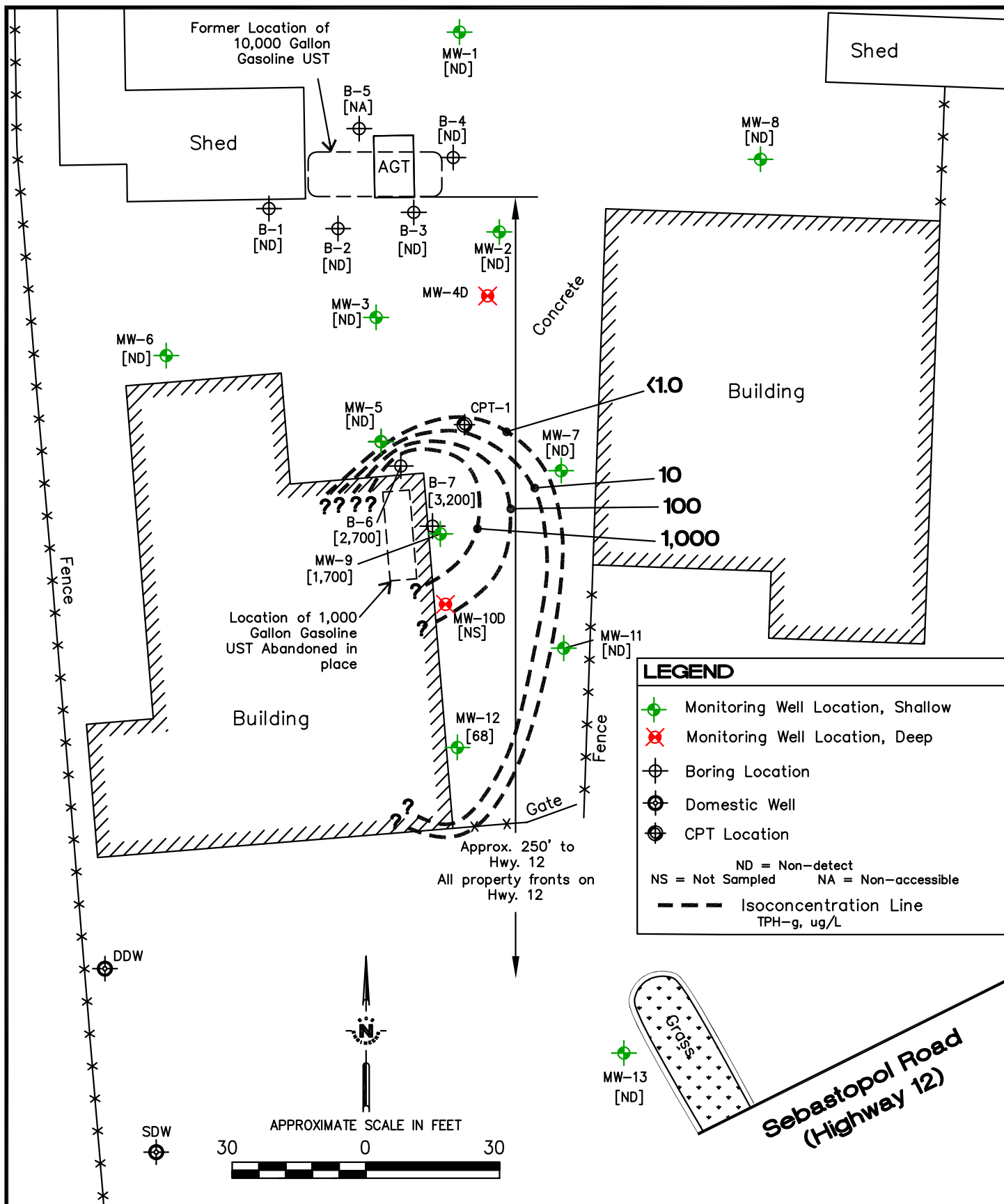
WEEKS DRILLING AND PUMP COMPANY, INC.
6100 SEBASTOPOL ROAD (HWY. 12)
SEBASTOPOL, CALIFORNIA

SCALE:

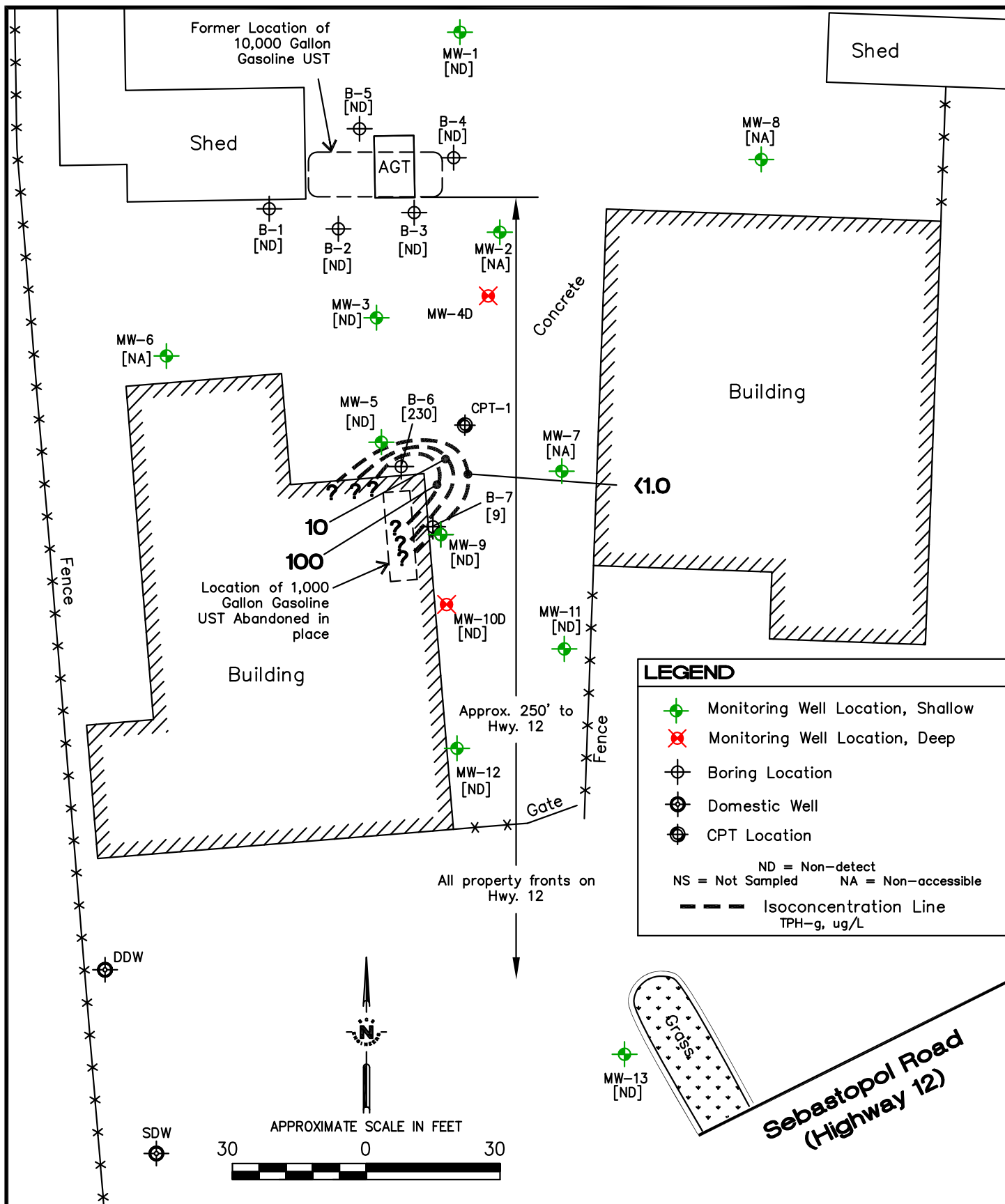
1" = 30'

FIGURE NO.:

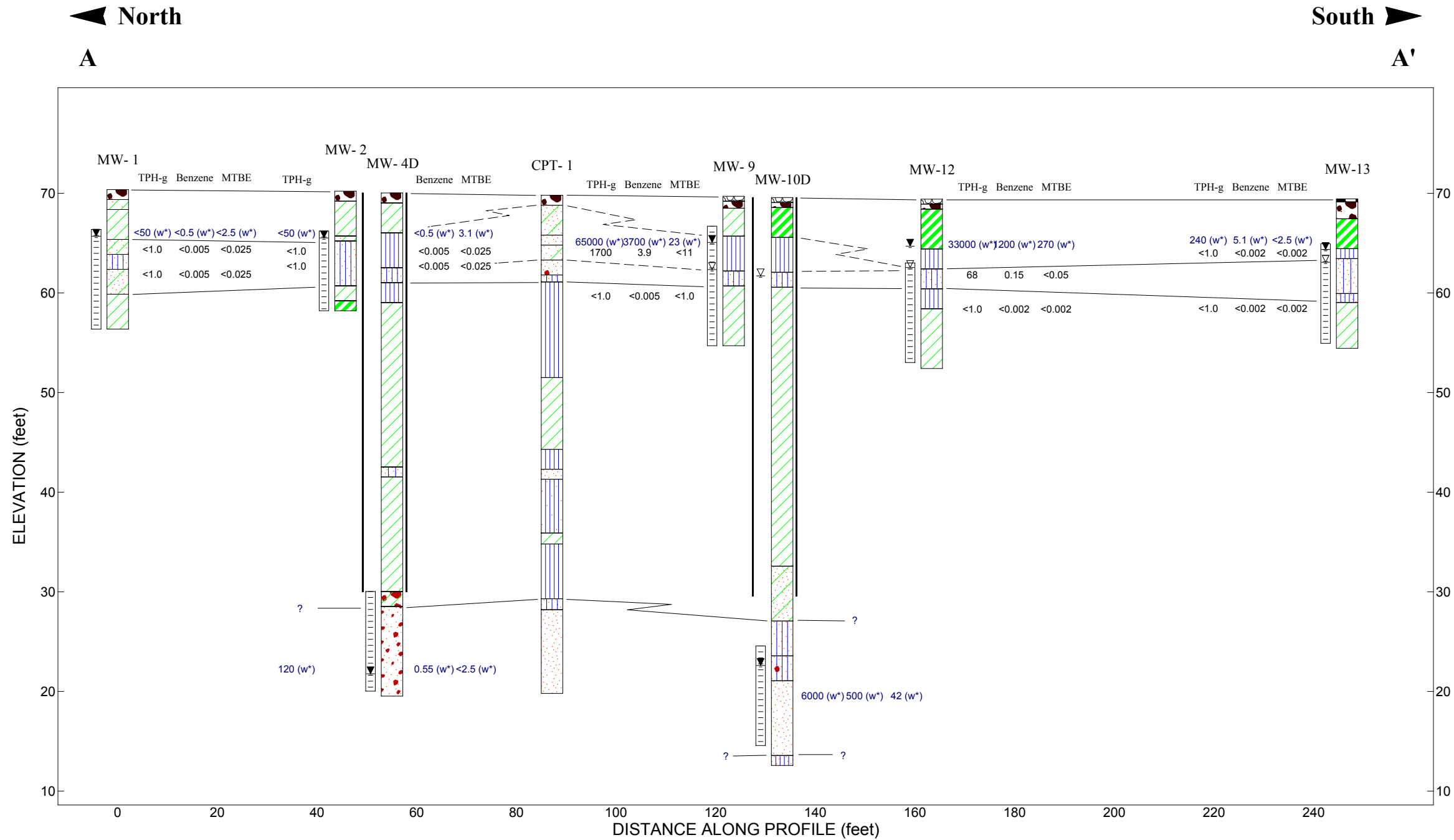
6A



SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3645 WESTWIND BOULEVARD SANTA ROSA, CALIFORNIA 95403 PH. (707) 546-9461 FAX. (707) 544-5769			SHEET TITLE: ISOCONCENTRATION MAP TPH-g IN SOIL < 8'		SCALE: 1" = 30'
PROJECT TITLE: WEEKS DRILLING AND PUMP COMPANY, INC. 6100 SEBASTOPOL ROAD (HWY. 12) SEBASTOPOL, CALIFORNIA			FIGURE NO.: 7		
PROJ. NO.: 3340.00 DATE: 5/27/05	DWN. BY: AJH CHK. BY:	ACAD FILE: 3340.00-IS06-3468r1 APP. BY: SK			



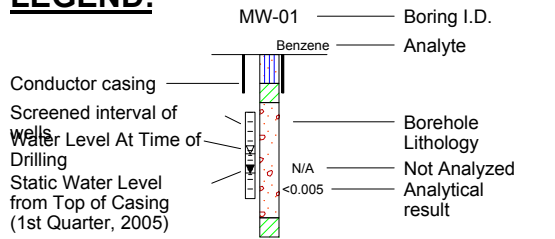
SCS ENGINEERS ENVIRONMENTAL CONSULTANTS 3645 WESTWIND BOULEVARD SANTA ROSA, CALIFORNIA 95403 PH. (707) 546-9461 FAX. (707) 544-5769			SHEET TITLE: ISOCONCENTRATION MAP TPH-g IN SOIL >8'		SCALE: 1" = 30'
PROJECT TITLE: WEEKS DRILLING AND PUMP COMPANY, INC. 6100 SEBASTOPOL ROAD (HWY. 12) SEBASTOPOL, CALIFORNIA			FIGURE NO.: 8		
PROJ. NO.: 3340.00 DATE: 5/27/05	DWN. BY: AJH CHK. BY:	ACAD. FILE: 3340.00-IS08-3468r1 APP. BY: SK			



Explanation

	GRAVEL with Sand (GP), Poorly-graded		SAND (SP), Poorly-graded		SAND with Gravel (SP), Poorly-graded		SAND with Clay (SP-SC), Poorly-graded
	SAND with Silt (SP-SM), Poorly-graded		CLAYEY SAND (SC)		SILTY SAND (SM)		SILTY SAND with Gravel (SM)
	SILT (ML)		SILT with Sand (ML)		SANDY SILT (ML)		CLAY (CL), Low Plasticity
	CLAY with Sand (CL), Low Plasticity		GRAVELLY CLAY (CL)		SANDY CLAY (CL), Low Plasticity		CLAY (CH), High Plasticity
	Asphalt		Concrete		SAND & GRAVEL - (base rock fill)		

LEGEND:



TPH-g	Concentration of Total Petroleum Hydrocarbons as gasoline reported from laboratory analysis by EPA Method 8015B.
Benzene	Concentration of Benzene reported from laboratory analysis by EPA Method 8260A/B or EPA Method 8020A.
MTBE	Concentration of Methyl Tertiary-butyl Ether reported from laboratory analysis by EPA Method 8260A/B or EPA Method 8020A.
(w)	Aqueous samples (initial drilling results)
(w*)	Aqueous samples (1st Quarter results, 2005)
<	Less-than numerical value of the detection limit.
mg/kg	Milligrams per kilogram (soil samples)
ug/L	Micrograms per Liter (aqueous samples)

Vertical Exaggeration: 2x

NO.	DATE	REVISIONS	DRN	CHK	DGS	ENG	GS	CHF	ENG	PROJ	ENG
	05-19-05	ISSUED FOR REVIEW	SK								

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Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473

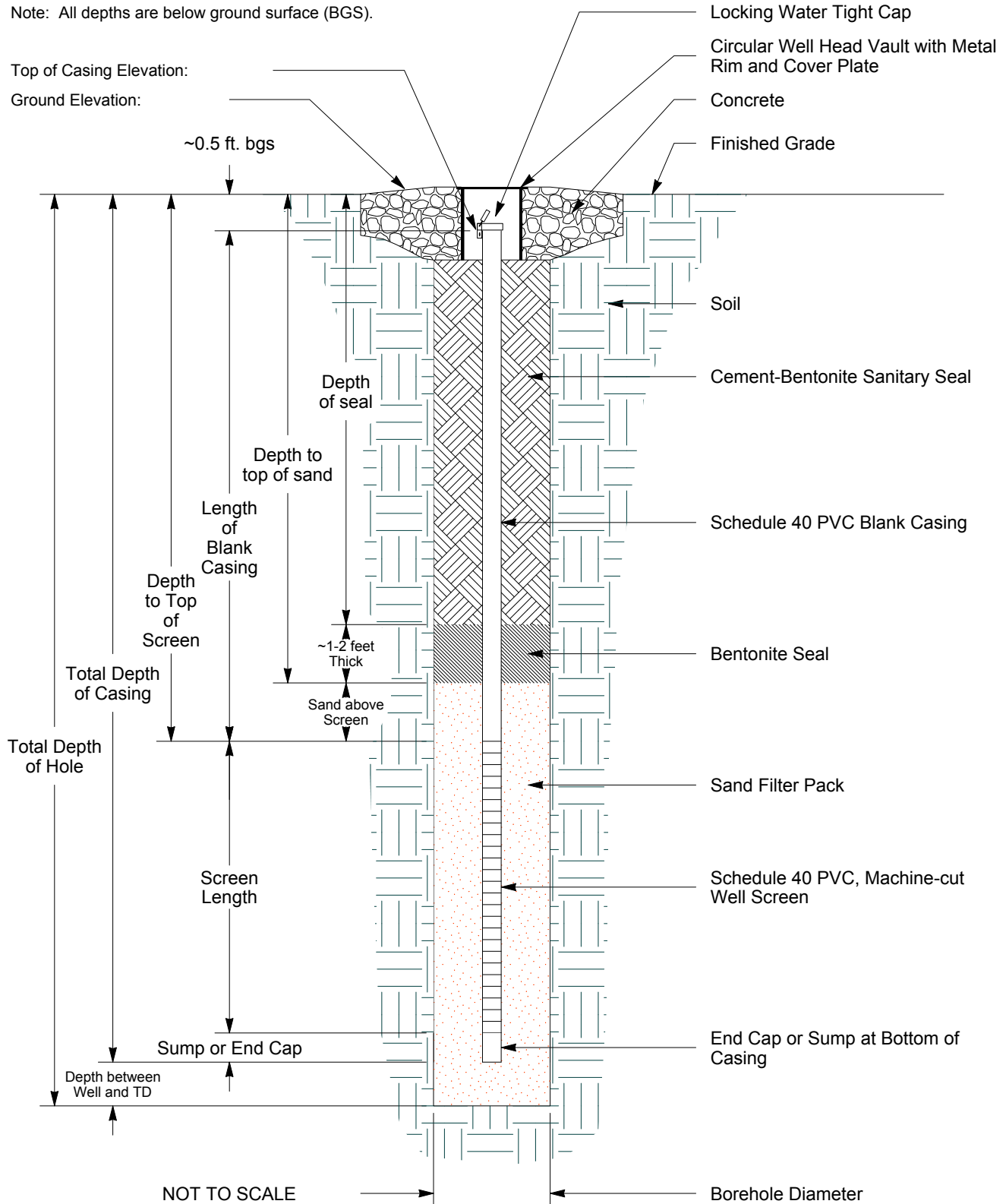
Geologic Section A - A'

SCALE	JOB NO.	FIGURE NO.	REV.
1" = 24.0'	01203340.00	9	1

Note: All depths are below ground surface (BGS).

Top of Casing Elevation:

Ground Elevation:



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3645 Westwind Boulevard
Santa Rosa, California 95403
Ph.: 707-546-9461 Fax: 707-544-5769

WELL COMPLETION DIAGRAM

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road
Sebastopol, California 95473
Job Number: 01203340.00

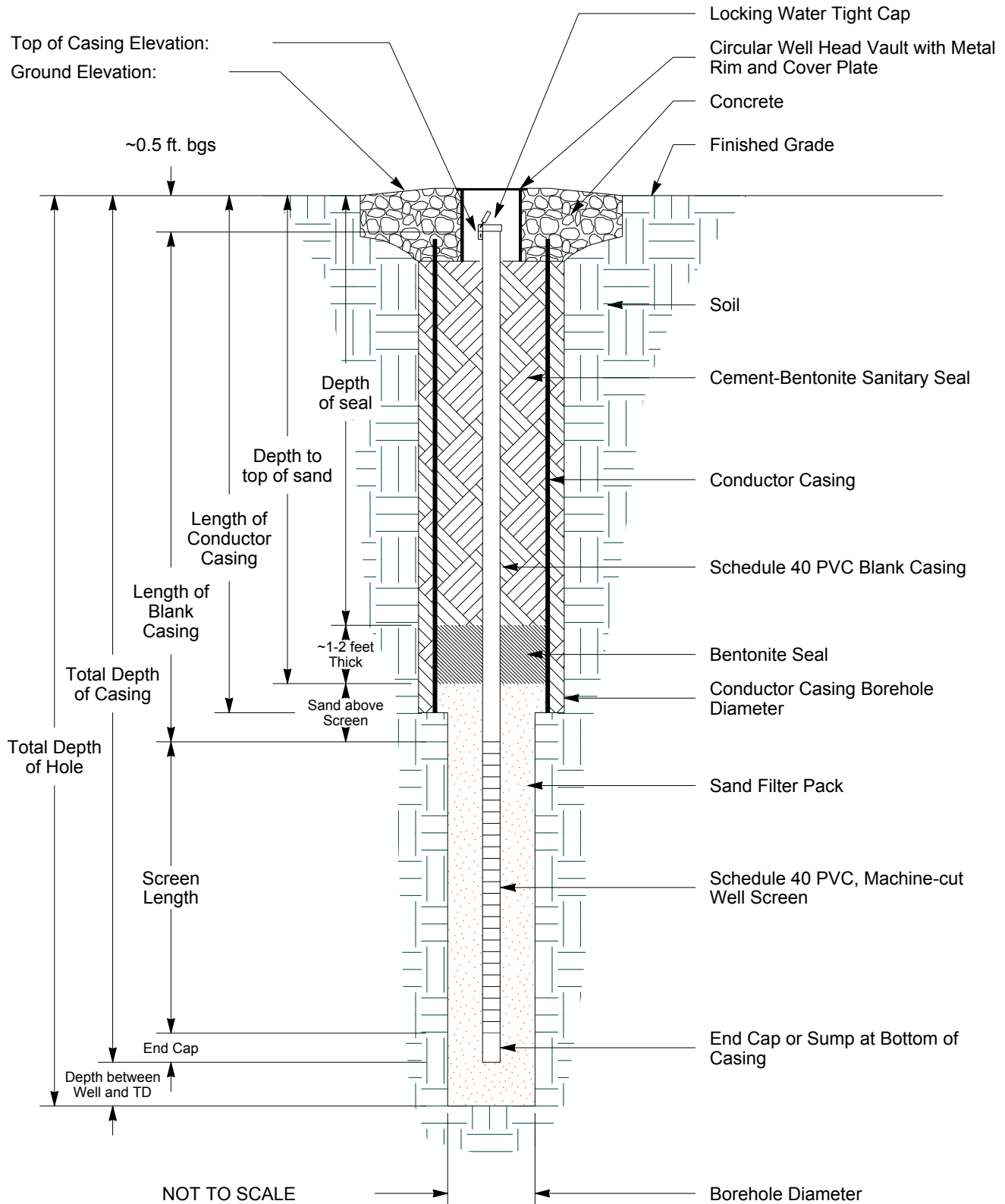
FIGURE:

W

Note: All depths are below ground surface (BGS).

Top of Casing Elevation:

Ground Elevation:



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Santa Rosa, California 95403
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WELL COMPLETION DIAGRAM WITH CONDUCTOR CASING

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road
Sebastopol, California 95473
Job Number: 01203340.00

FIGURE:

WC

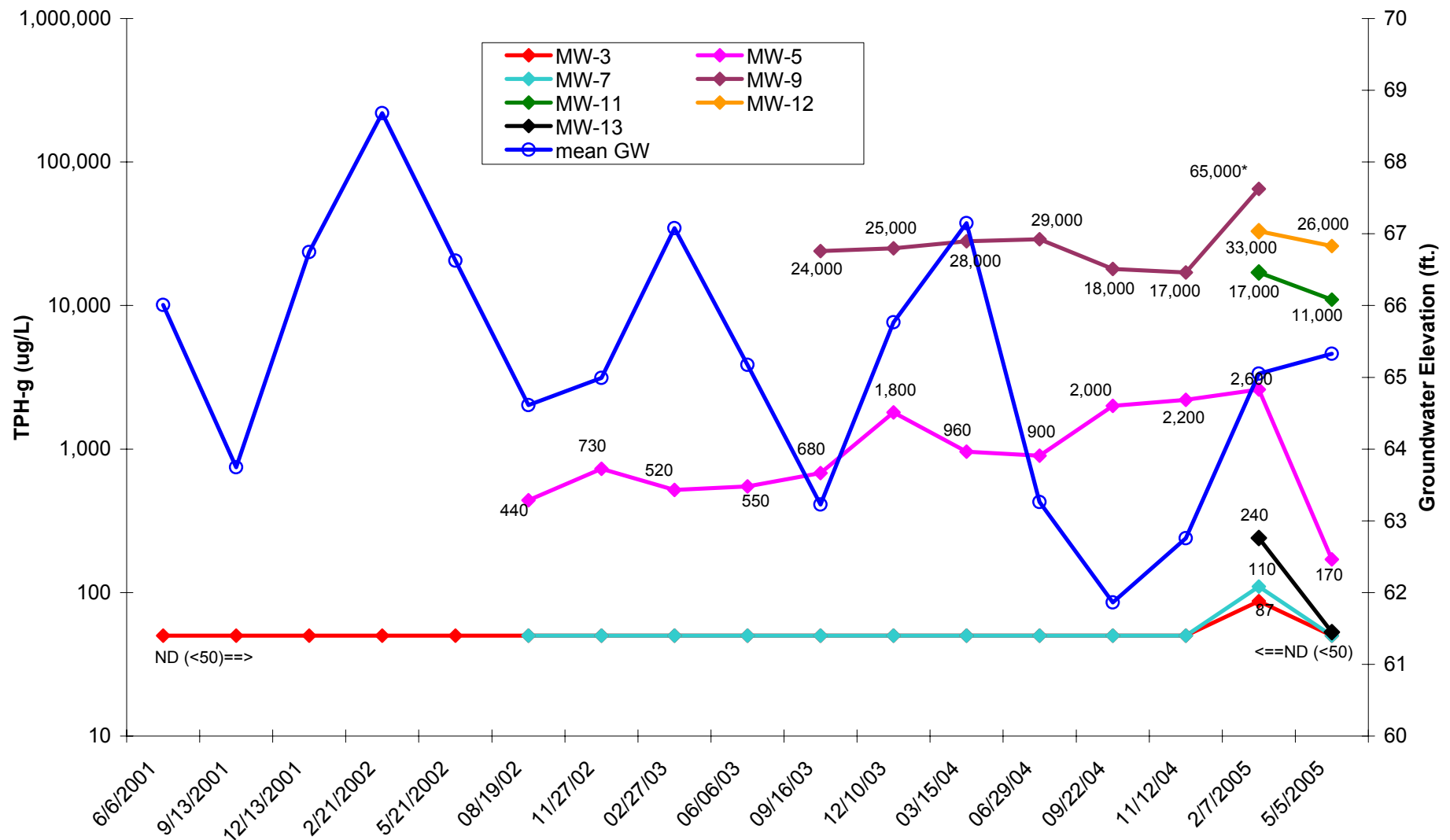
Diagrams and Tables

Key to Diagrams and Tables
6100 Sebastopol Road, Sebastopol

TPH-g	=	Total petroleum hydrocarbons in the gasoline range
B	=	Benzene
T	=	Toluene
E	=	Ethylbenzene
X	=	Xylenes
MTBE	=	Methyl tertiary butyl ether
Other Oxys	=	diisopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tert-amyl methyl ether (TAME), and tert-butyl alcohol (TBA)
4-Oxys	=	DIPE, ETBE, TAME, TBA
EDC	=	Ethylene dichloride ²
EDB	=	Ethylene dibromide ³
CB	=	Chlorobenzene
1,2-DCB	=	1,2-dichlorobenzene
1,3-DCB	=	1,3-dichlorobenzene
1,4-DCB	=	1,4-dichlorobenzene
Pb Scavs	=	Lead scavengers (EDC, EDB)
mg/kg	=	Milligrams per kilogram
ug/L	=	Micrograms per liter

² EDC has been referred to as 1,2-dichloroethane (1,2-DCA) in previous reports.

³ EDB has been referred to as 1,2-dibromoethane (1,2-DBA) in previous reports.



* = Confirmation sample which was collected on March 21, 2005 determined to be free product in February 7, 2005 sample.

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SANTA ROSA, CALIFORNIA
PH: (707) 546-9461 FX: (707) 544-5769

Drawn By: KLC

File Name: TPH-g-GW

TPH-g & Groundwater Elevation vs. Time

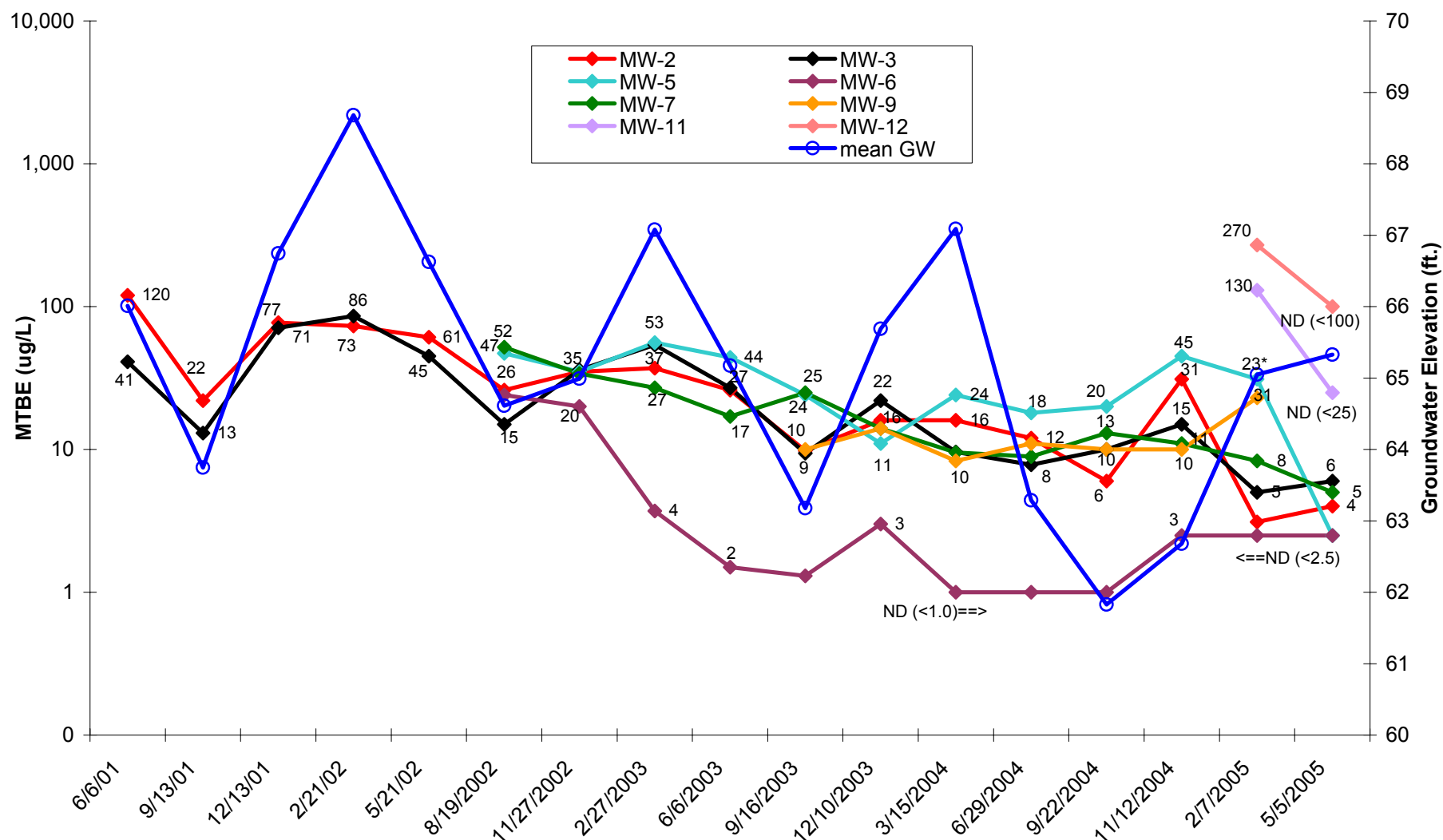
Weeks Drilling & Pump
6100 Sebastopol Road
Sebastopol, California

Job Number: 01203340.00

DIAGRAM

A

DATE: 05/20/05



* = Confirmation sample which was collected on March 21, 2005 determined to be free product in sample collected on February 7, 2005.

SCS ENGINEERS

3645 WESTWIND BOULEVARD
SANTA ROSA, CALIFORNIA
PH: (707) 546-9461 FX: (707) 544-5769

Drawn By: KLC

File Name: MTBE-GW

MTBE & Groundwater Elevation vs. Time

Weeks Drilling & Pump
6100 Sebastopol Road
Sebastopol, California

Job Number: 01203340.00

DIAGRAM

B

DATE: 05/20/05

Table 1: Soil Boring Analytical Results - 1999 to 2003
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	MTBE	Pb
		mg/kg						
B-1-5'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-1-10'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-2-5'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-2-10'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-3-5'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-3-10'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-4-5'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-4-10'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
B-5-10'	07/07/99	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	NA
MW-1-6'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-1-8.5'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-2-6'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-2-7.5'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-3-6.5'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-3-10.5'	06/01/01	<1.0	<0.005	<0.005	<0.005	<0.015	<0.025	NA
MW-5-6'	07/01/02	<1.0	0.011	<0.005	0.013	<0.005	<1.0*	NA
MW-5-8'	07/01/02	<1.0	0.024	<0.005	0.029	0.015	0.010**	NA
MW-6-8'	07/02/02	<1.0	<0.005	<0.005	<0.005	<0.005	0.014**	NA
MW-7-7'	07/02/02	<1.0	<0.005	<0.005	<0.005	<0.005	0.010**	NA
MW-8-8"	07/02/02	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005**	NA
B-6-5'	09/04/03	2,700	2.3	14	27	130	<10	9.0
B-6-10'	09/04/03	230	0.22	<0.2	0.41	1.2	<1.0	<5.0
B-6-15'	09/04/03	16	<0.03	<0.03	<0.03	<0.03	<1.0	7.0
B-7-5'	09/06/03	3,200	6.8	35	41	190	<22	7.6
B-7-10'	09/06/03	8.7	0.08	0.27	0.17	0.59	<1.0	8.6
MW-9-5'	09/06/03	1,700	3.9	3.9	21	62	<11	7.4
MW-9-10'	09/06/03	<1.0	<0.005	<0.005	<0.005	<0.005	<1.0	8.2

* Analysis by EPA Method 8020

** Other four ether-based oxygenates ND by EPA Method 8260B.

Table 2: Soil Boring Analytical Results (Groundwater)
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	MTBE	4-Oxys	1,2-DCA	CB	1,3-DCB	1,4-DCB	1,2-DCB	1,2-DBA
		μg/L												
B-1	07/07/99	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 to <5.0	<0.5	<0.5	<0.5	1.2	2.6	<0.5
B-2	07/07/99	79	<0.5	<0.5	<0.5	<0.5	67	<0.5 to <5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B-3	07/07/99	51	<0.5	<0.5	<0.5	<0.5	18	<0.5 to <5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B-4	07/07/99	<50	<0.5	<0.5	<0.5	<0.5	30	<0.5 to <5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B-5	07/07/99	<50	<0.5	<0.5	<0.5	0.61	20	<0.5 to <5.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table 3: Soil Boring Analytical Results - 2005
6100 Sebastopol Road, Sebastopol

[illegible]

**Table 4: Groundwater Flow Direction and Gradient
6100 Sebastopol Road, Sebastopol**

Well #	Date	Top of Casing Elevation (feet > msl)	Depth to Groundwater (feet)	Water Level Elevation (feet > msl)	Groundwater Flow Direction & Gradient (i)
MW-1	06/06/01	71.49	5.35	66.14	S25°E i = 0.003
MW-2		71.2	5.22	65.98	
MW-3		71.12	5.21	65.91	
MW-1	09/13/01	71.49	7.62	63.87	S5°E i = 0.003
MW-2		71.2	7.48	63.72	
MW-3		71.12	7.47	63.65	
MW-1	12/13/01	71.49	4.63	66.86	S25°E i = 0.005
MW-2		71.2	4.51	66.69	
MW-3		71.12	4.44	66.68	
MW-1	02/21/02	71.49	Well inaccessible		Not Calculated
MW-2		71.2	2.49	68.71	
MW-3		71.12	2.47	68.65	
MW-1	05/21/02	71.49	Well inaccessible		Not Calculated
MW-2		71.2	4.57	66.63	
MW-3		71.12	4.5	66.62	
MW-1	08/19/02	71.49	6.52	64.97	Southerly i = 0.003
MW-2		71.2	6.48	64.72	
MW-3		71.12	6.49	64.63	
MW-4D		70.99	41.92	29.07	
MW-5		70.82	6.48	64.34	
MW-6		70.88	6.35	64.53	
MW-7		71.17	6.8	64.37	
MW-8		72.32	7.59	64.73	
MW-1	11/27/02	71.49	6.24	65.25	Southeast i = 0.005
MW-2		71.2	6.14	65.06	
MW-3		71.12	6.12	65	
MW-4D		70.99	42.23	28.76	
MW-5		70.82	5.99	64.83	
MW-6		70.88	5.88	65	
MW-7		71.17	6.38	64.79	
MW-8		72.32	7.31	65.01	
MW-1	02/27/03*	69.87	2.51	67.36	Southerly i = 0.007
MW-2		69.61	2.41	67.2	
MW-3		69.55	2.43	67.12	
MW-4D		69.43	41.88	27.55	
MW-5		69.25	2.45	66.8	
MW-6		69.32	2.25	67.07	
MW-7		69.6	2.77	66.83	
MW-8		70.74	3.58	67.16	
MW-1	06/06/03	69.87	4.39	65.48	Southerly i = 0.007
MW-2		69.61	4.31	65.3	
MW-3		69.55	4.34	65.21	
MW-4D		69.43	43.06	26.37	
MW-5		69.25	4.31	64.94	
MW-6		69.32	4.19	65.13	
MW-7		69.6	4.7	64.9	
MW-8		70.74	5.49	65.25	

* Monitoring wells re-surveyed to msl on January 30 and February 4, 2003.

**Table 4: Groundwater Flow Direction and Gradient
6100 Sebastopol Road, Sebastopol**

Well #	Date	Top of Casing Elevation (feet > msl)	Depth to Groundwater (feet)	Water Level Elevation (feet > msl)	Groundwater Flow Direction & Gradient (i)
MW-1	09/16/03**	69.87	6.35	63.52	Southerly i = 0.006
MW-2		69.61	6.27	63.34	
MW-3		69.55	6.31	63.24	
MW-4D		69.43	43.27	26.16	
MW-5		69.25	6.26	62.99	
MW-6		69.32	6.17	63.15	
MW-7		69.60	6.60	63.00	
MW-8		70.74	7.38	63.36	
MW-9		69.49	6.66	62.83	
MW-1	12/10/03	69.87	3.78	66.09	Southerly i = 0.01
MW-2		69.61	3.81	65.80	
MW-3		69.55	3.46	66.09	
MW-4D		69.43	43.91	25.52	
MW-5		69.25	3.73	65.52	
MW-6		69.32	3.30	66.02	
MW-7		69.60	4.31	65.29	
MW-8		70.74	5.18	65.56	
MW-9		69.49	4.35	65.14	
MW-1	03/15/04	69.87	2.39	67.48	Southerly i = 0.007
MW-2		69.61	2.32	67.29	
MW-3		69.55	2.39	67.16	
MW-4D		69.43	44.36	25.07	
MW-5		69.25	2.40	66.85	
MW-6		69.32	2.26	67.06	
MW-7		69.60	2.69	66.91	
MW-8		70.74	3.46	67.28	
MW-9		69.49	2.81	66.68	
MW-1	06/29/04	69.87	6.35	63.52	Southerly i = 0.005
MW-2		69.61	6.24	63.37	
MW-3		69.55	6.27	63.28	
MW-4D		69.43	45.11	24.32	
MW-5		69.25	6.19	63.06	
MW-6		69.32	6.07	63.25	
MW-7		69.60	6.59	63.01	
MW-8		70.74	7.40	63.34	
MW-9		69.49	6.02	63.47	
MW-1	09/22/04	69.87	7.93	61.94	South-Southeast i = 0.003
MW-2		69.61	7.76	61.85	
MW-3		69.55	7.32	62.23	
MW-4D		69.43	46.90	22.53	
MW-5		69.25	7.54	61.71	
MW-6		69.32	7.54	61.78	
MW-7		69.60	7.90	61.70	
MW-8		70.74	8.91	61.83	
MW-9		69.49	7.89	61.60	

** Monitoring wells re-surveyed to msl on January 30 and February 4, 2003.

**Table 4: Groundwater Flow Direction and Gradient
6100 Sebastopol Road, Sebastopol**

Well #	Date	Top of Casing Elevation (feet > msl)	Depth to Groundwater (feet)	Water Level Elevation (feet > msl)	Groundwater Flow Direction & Gradient (i)
MW-1	11/12/04	69.87	6.82	63.05	South-Southeast i = 0.008
MW-2		69.61	6.91	62.70	
MW-3		69.55	6.72	62.83	
MW-4D		69.43	47.59	21.84	
MW-5		69.25	6.81	62.44	
MW-6		69.32	5.76	63.56	
MW-7		69.60	7.34	62.26	
MW-8		70.74	8.27	62.47	
MW-9		69.49	7.37	62.12	
MW-1		02/07/05	69.87	4.32	
MW-2	69.61		4.23	65.38	
MW-3	69.55		4.17	65.38	
MW-4D	69.43		47.80	21.63	
MW-5	69.25		4.14	65.11	
MW-6	69.32		3.91	65.41	
MW-7	69.60		4.62	64.98	
MW-8	70.74		5.54	65.20	
MW-9	69.49		4.56	64.93	
MW-10D	69.16		Dry		
MW-11	69.19		4.47	64.72	
MW-12	69.06		4.51	64.55	
MW-13	68.95		4.73	64.22	
MW-1	05/05/05		69.87	3.78	66.09
MW-2		69.61	3.88	65.73	
MW-3		69.55	4.76	64.79	
MW-4D		69.43	46.49	22.94	
MW-5		69.25	3.85	65.40	
MW-6		69.32	3.16	66.16	
MW-7		69.60	4.28	65.32	
MW-8		70.74	5.02	65.72	
MW-9		69.49	4.39	65.10	
MW-10D		69.16	46.19	22.97	
MW-11		69.19	4.18	65.01	
MW-12		69.06	4.26	64.80	
MW-13		68.95	4.69	64.26	

Note: Groundwater flow direction rounded to nearest 5 degrees, excluding MW-4D and MW-10D.

* Excluding deep wells MW-4D and MW-10D.

** Excluding deep wells MW-4D and MW-10D and MW-3.

Table 5: Monitoring Well Groundwater Analytical Results
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	Other Oxys	MTBE	Pb Scavs
		-----µg/L-----							
MW-1	06/06/01	ND	ND	ND	ND	ND	ND	ND	ND
	09/13/01	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <50	<1.0	<1.0
	12/13/01	<50	<0.5	1.1	0.53	2.5	<1.0 to <25	<1.0	NA
	02/21/02	Well inaccessible (submerged)							
	05/21/02	Well inaccessible (submerged)							
	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	06/06/03	<50	0.55	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	11/12/04	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
	02/07/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
MW-2	06/06/01	120*	ND	ND	ND	ND	ND	120	ND
	09/13/01	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <50	22	<1.0
	12/13/01	77*	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	77	NA
	02/21/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	73	<0.5
	05/21/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	61	<0.5
	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	26	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	35	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	37	NA
	06/06/03	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	26	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	9.8	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	16	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	10	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	12	NA
	09/22/04	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	6.0	NA
	11/12/04	<50	<0.5	<0.5	<0.5	<1.5	NA	31	NA
	02/07/05	<50	<0.5	<0.5	<0.5	<1.5	NA	3.1	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	3.7	NA

Table 5: Monitoring Well Groundwater Analytical Results
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	Other Oxys	MTBE	Pb Scavs
		-----µg/L-----							
MW-3	6/6/2001	ND	ND	ND	ND	ND	ND	41	ND
	09/13/01	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <50	13	<1.0
	12/13/01	71*	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	71	NA
	02/21/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	86	<0.5
	05/21/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	45	<0.5
	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	15	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	36	NA
	02/27/03	54*	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	54	NA
	06/06/03	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	27	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	9.4	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	22	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	9.6	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	7.8	NA
	09/22/04	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	9.9	NA
	11/12/04	<50	<0.5	<0.5	<0.5	<1.5	NA	15	NA
	02/07/05	87	<0.5	1.1	<0.5	3.2	NA	4.7	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	5.7	NA
* Laboratory notes that the TPH-g result consists exclusively of MTBE.									
MW-4D	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	06/06/03	<50	2.8	0.73	<0.5	<0.5	<0.5 to <10	<0.5	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.0	<1.0 to <25	<1.0	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	09/22/04	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	11/12/04	Well was dry							
	02/07/05	120	0.55	<0.5	<0.5	2.8	NA	<2.5	NA
	05/05/05	52	1.0	0.5	<0.5	2.2	NA	<2.5	NA

Table 5: Monitoring Well Groundwater Analytical Results
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	Other Oxys	MTBE	Pb Scavs
		-----µg/L-----							
MW-5	08/19/02	440	78	0.5	1.9	7.3	<0.5 to <10	47	<0.5
	11/27/02	730	200	0.83	4.2	4.8	<0.5 to <10	35	NA
	02/27/03	520	71	<1.0	19	15	<1.0 to <25	53	NA
	06/06/03	550	79	<3.0	30	<5.0	<5.0 to <100	44	NA
	09/16/03	680	120	1.0	9.4	1.0	<1.0 to <25	24	NA
	12/10/03	1,800	450	7.5	66	22	<1.0 to <25	11	NA
	03/15/04	960	180	2.7	70	8.1	<1.0 to <25	24	NA
	06/29/04	900	110	2.6	10	<6.0	<1.0 to <25	18	NA
	09/22/04	2,000	480	2.2	74	21	<1.0 to <25	20	NA
	11/12/04	2,200	330	5.3	69	28	NA	45	NA
	02/07/05	2,600	200	<5.0	120	<15	NA	31	NA
	05/05/05	170	21	<0.5	14	<1.5	NA	<2.5	NA
MW-6	08/19/02	<50	0.46	<0.3	<0.5	<0.5	0.90 TAME	24	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	20	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	3.7	NA
	06/06/03	<50	<0.6	<0.6	<1.0	<1.0	<1.0 to <20	1.5	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	1.3	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	3.0	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	11/12/04	<50	<0.5	<0.5	<0.5	<1.5	NA	2.5	NA
	02/07/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA

Table 5: Monitoring Well Groundwater Analytical Results
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	Other Oxys	MTBE	Pb Scavs
		-----µg/L-----							
MW-7	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	52	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	34	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	27	NA
	06/06/03	<50	0.49	<0.3	<0.5	<0.5	<0.5 to <10	17	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	25	NA
	12/10/03	<50	0.59	<0.5	<0.5	<1.5	<1.0 to <25	14	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	9.5	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	8.9	NA
	09/22/04	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	13	NA
	11/12/04	<50	0.95	<0.5	1.2	<1.5	NA	11	NA
	02/07/05	110	1.0	0.62	1.1	1.8	NA	8.3	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	4.9	NA
MW-8	08/19/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	<0.5
	11/27/02	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	NA
	02/27/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	06/06/03	<50	<0.3	<0.3	<0.5	<0.5	<0.5 to <10	<0.5	NA
	09/16/03	<50	<1.0	<1.0	<1.0	<1.0	<1.0 to <25	<1.0	NA
	12/10/03	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	03/15/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	06/29/04	<50	<0.5	<0.5	<0.5	<1.5	<1.0 to <25	<1.0	NA
	11/12/04	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
	02/07/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA
	05/05/05	<50	<0.5	<0.5	<0.5	<1.5	NA	<2.5	NA

Table 5: Monitoring Well Groundwater Analytical Results
6100 Sebastopol Road, Sebastopol

ID	Date	TPH-g	B	T	E	X	Other Oxys	MTBE	Pb Scavs
		-----µg/L-----							
MW-9	09/16/03	24,000	530	600	1,300	3,470	<20 to <500	<20	NA
	12/10/03	25,000	800	730	1,400	3,200	<1.0 to <25	14	NA
	03/15/04	28,000	1,000	830	1,600	4,500	<2.0 to <50	8.3	NA
	06/29/04	29,000	670	620	1,300	3,200	<5.0 to <100	11	NA
	09/22/04	18,000	730	370	990	1,760	<1.0 to <25	9.9	NA
	11/12/04	17,000	850	520	940	1,900	NA	10	NA
	02/07/05	280,000**	7,300	11,000	6,700	28,000	NA	1,400	NA
	03/21/05	65,000	3,700	2,900	1,800	2,600	NA	23***	NA
	05/05/05	Not sampled due to presence of free product in well							
MW-10D	02/07/05	6,000	500	23	73	200	NA	42	NA
	05/05/05	3,200	430	<5.0	300	20	NA	<25	NA
MW-11	02/07/05	17,000	55	74	560	710	NA	130	NA
	05/05/05	11,000	26	80	540	620	NA	<25	NA
MW-12	02/07/05	33,000	1,200	520	2,600	3,300	NA	270	NA
	05/05/05	26,000	2,100	210	2,500	1,800	NA	<100	NA
MW-13	02/07/05	240	5.1	11	11	38	NA	<2.5	NA
	05/05/05	53	1.5	<0.5	2.4	2.0	NA	<2.5	NA

** Free product.

*** ND for the additional fuel oxygenates.

Appendices

Appendix A

Unified Soil Classification System Chart and Boring Log Legend
Boring Logs for MW-10D through MW-13
DWR 188 forms for MW-10D through MW-13

GENERAL SOIL CATEGORIES			SYMBOLS		TYPICAL SOIL TYPES			
			GRAPHIC	LETTER				
COARSE GRAINED SOILS More than half is larger than no. 200 sieve	Gravel More than half of coarse fraction is larger than No. 4 sieve size	Clean Gravel with little or no fines		GW	Well Graded Gravels, Gravel - Sand mixtures			
				GP	Poorly Graded Gravels, Gravel - Sand mixtures			
		Gravel with more than 12% fines		GM	Silty Gravels, Poorly Graded; Gravel - Sand - Silt Mixtures			
				GC	Clayey Gravels, Poorly Graded; Gravel - Sand - Clay Mixtures			
	Sand More than half of coarse fraction is smaller than No. 4 sieve size	Clean Sand with little or no fines		SW	Well Graded Sands, Gravelly Sands			
				SP	Poorly Graded Sands, Gravelly Sands			
		Sand with more than 12% fines		SM	Silty Sands, Poorly Graded; Sand - Silt Mixtures			
				SC	Clayey Sands, Poorly Graded; Sand - Clay Mixtures			
FINE GRAINED SOILS More than half is smaller than no. 200 sieve	Silt and Clay Liquid Limit Less than 50%			ML	Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or Clayey Silts with Slight Plasticity			
				CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays			
				OL	Organic Silts and Organic Silty Clays of Low Plasticity			
	Silt and Clay Liquid Limit Greater than 50%			MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silts			
				CH	Inorganic Clays of High Plasticity, Fat Clays			
				OH	Organic Clays of Medium to High Plasticity			
Highly Organic Soils			PT	Peat and Other Highly Organic Soils				
Bedrock			BR	Bedrock				
Aggregate Base			B	Mixed Fill				
Asphalt			A	Asphalt				
Concrete			C	Concrete				
<div><div><div><div><div></div><div>Soil sample submitted for chemical analysis</div></div><div><div><input checked="" type="checkbox"/></div><div>Soil sample examined for soil classification</div></div></div><div><div>Sampler Type</div><div>CMSS = CA Modified Split Spoon</div><div>SPT = Standard Penetration Test</div><div>CBS = Continuous Barrel Sampler</div><div>GRAB = Grab Sample</div><div>HA = Hand Auger</div></div><div><div><div></div><div>Initial Static Water Level</div></div><div><div></div><div>First Identified Free Water</div></div><div><div>n.a. = not applicable</div><div>n.r. = not recorded</div></div></div></div></div>								
<div>SCS ENGINEERS</div> <div>Environmental Consultants</div> <div>3645 Westwind Boulevard</div> <div>Santa Rosa, California 95403</div> <div>Ph.: 707-546-9461 Fax: 707-544-5769</div>			<div>UNIFIED SOIL CLASSIFICATION SYSTEM CHART</div> <div>and BORING LOG LEGEND</div> <div>Weeks Drilling & Pump Co., Inc.</div> <div>6100 Sebastopol Road,</div> <div>Sebastopol, California 95473</div> <div>Job Number: 01203340.00</div>			<div>Figure:</div> <div>Appendix A</div> <div>A-1</div> <div>1 of 1</div>		

Boring Location: See site plan, adjacent to MW- 9

See Unified Soil Classification System (USCS)
for Legend and information not noted.

Notes: Drilled to 40' without sampling to set conductor casing, set conductor casing at 40'; drilled to 57' with 8" HSA.

Sample	Inches Recovered	Blows / 6 in	Sampler Type	Water Levels	PID (ppm)	Odor	Discoloration	Elevation	Depth in Feet	Graphic Log	Gravel %	Sand %	Silt %	Clay %	Lithologic Description and Drilling Comments:
						No	No	69.6							
						No	No	69.1 68.6							CONCRETE: over base rock.
															CLAY (CH): dark greenish gray. Lithology between 1-45' from MW-9 and drill cuttings.
								65.6							SILT (ML): with clay.
						Yes	Yes		5						SAND with Silt (SM): gray.
								62.1 60.6							CLAY (CL): brown. Gray.
									10						
						?	?		15						

1 of 3

6SCS-SANTA ROSA BORING LOG 01203340.00.GPJ SCS-SANTA ROSA.GDT 03/16/05

[illegible]

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BORING LOG MW-10D

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

Figure:

Appendix A
MW-10D

Sample	Inches Recovered	Blows / 6 in	Sampler Type	Water Levels	PID (ppm)	Odor	Discoloration	Elevation	Depth in Feet	Graphic Log	Gravel %	Sand %	Silt %	Clay %	Lithologic Description and Drilling Comments:
			SPT		31	↕	↕	27.1							SILTY SAND (SM): olive gray to dark gray, fine grained sand, wet.
XX	6	12				↕	↕		45		T	60	35	5	
XX	6	46				↕	↕	23.6			T	60	35	5	
XX	6	50/6"				↕	↕				20	40	30	10	SILTY SAND with Gravel (SM): olive gray to dark gray, fine to coarse grained sand and fine gravel, rounded, moist to wet.
			SPT			↕	↕	21.1							SAND (SP): dark gray, fine to medium grained sand, minor silt, wet.
XX	6	18				↕	↕		50			95	5		
XX	6	25				Yes	↕					95	5		
XX	6	25				↕	↕					95	5		
XX	6	40				↕	↕					95	5		
			SPT			↕	↕								SILT with Sand (ML): dark gray, very fine to fine grained sand, moist to wet.
XX	0	4				No	↕		55			95	5		
XX	3	6				↕	↕	13.6				20	70	10	
XX	6	8				↕	↕					20	70	10	
XX	6	9				↕	↕	12.6				20	70	10	TOTAL DEPTH = 57.0 FEET
									60						
									65						

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BORING LOG MW-10D

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

Figure:

Appendix A
MW-10D

3 of 3

Date (start, end): 1/20/05 - 1/20/05
 Drilling Time (start, end) 14:45 - 17:00
 Logged By: Stephen Knüttel
 Checked By:

Boring No.
MW-11

Boring Location: See site plan.

See Unified Soil Classification System (USCS)
 for Legend and information not noted.

Drilling Contractor: Weeks Drilling & Pump Co.

MW Installed: Y ☒ N ☐ if no, boring backfilled with:

Driller's Name: Tim Teller

Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐

Drilling Method: 8-in Hollow-Stem Auger

Auger Depth, ft: 17.0 Total Depth, ft: 17.0

Sampling Method: CMSS

Hammer weight / fall: 140 lbs / 30 inch

Notes:

Sample	Inches Recovered	Blows / 6 in	Sampler Type	Water Levels	PID (ppm)	Odor	Discoloration	Elevation	Depth in Feet	Graphic Log	Gravel %	Sand %	Silt %	Clay %	Lithologic Description and Drilling Comments:
								69.7							
								69.2							CONCRETE: over base rock.
								68.2							CLAY (CH): dark gray.
						No	No								
					5.0			64.6	5						SILT (ML): grayish brown.
								63.7			10	60	30		SILTY SAND (SM): dark gray, very fine to fine grained sand, moist to wet.
											50	40	10		
						Yes	?	61.2							SANDY SILT (ML): dark gray, very fine to fine grained sand, wet.
					1.0										
								58.7	10		40	50	10		CLAY (CL): dark gray, moist to wet.
											40	50	10		
						No	No				5	25	70		
					0				15		5	35	60		Minor fine to medium grained sand.
											10	30	60		
											5	25	70		
								52.7							
TOTAL DEPTH = 17.0 FEET															

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BORING LOG MW-11

Weeks Drilling & Pump Co., Inc.
 6100 Sebastopol Road,
 Sebastopol, California 95473
 Job Number: 01203340.00

Figure:

Appendix A
 MW-11

1 of 1

Date (start, end): 1/20/05 - 1/20/05
 Drilling Time (start, end) 08:05 - 10:45
 Logged By: Stephen Knüttel
 Checked By:

Boring No.
MW-12

Boring Location: See site plan.

See Unified Soil Classification System (USCS)
 for Legend and information not noted.

Drilling Contractor: Weeks Drilling & Pump Co.

MW Installed: Y ☒ N ☐ if no, boring backfilled with:

Driller's Name: Tim Teller

Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐

Drilling Method: 8-in Hollow-Stem Auger

Auger Depth, ft: 17.0 Total Depth, ft: 17.0

Sampling Method: CMSS

Hammer weight / fall: 140 lbs / 30 inch

Notes:

Sample	Inches Recovered	Blows / 6 in	Sampler Type	Water Levels	PID (ppm)	Odor	Discoloration	Elevation	Depth in Feet	Graphic Log	Gravel %	Sand %	Silt %	Clay %	Lithologic Description and Drilling Comments:
								69.4							
								68.9							CONCRETE: over base rock.
						No	No	68.4							CLAY (CH): dark gray, moist to wet.
															Greenish gray.
							Yes	64.4	5						SILT (ML): greenish gray, minor very fine grained sand, moist to wet.
					57								70	30	
						Yes		62.4					70	30	SILTY SAND (SM): dark gray to black, very fine to fine grained sand, wet.
													20	10	
					6			60.4	10						SILT (ML): dark gray, minor very fine grained sand, wet.
							No	58.4							CLAY (CL): dark gray, minor, moist to wet.
						No									
					0				15				40	60	
													40	60	
													40	60	
								52.4							
TOTAL DEPTH = 17.0 FEET															

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BORING LOG MW-12

Weeks Drilling & Pump Co., Inc.
 6100 Sebastopol Road,
 Sebastopol, California 95473
 Job Number: 01203340.00

Figure:

Appendix A
 MW-12

1 of 1

SCS-SANTA ROSA BORING LOG 01203340.00.GPJ SCS-SANTA ROSA.GDT 03/16/05

Date (start, end): 1/20/05 - 1/20/05
 Drilling Time (start, end) 10:50 - 10:13
 Logged By: Stephen Knüttel
 Checked By:

Boring No.
MW-13

Boring Location: See site plan.

See Unified Soil Classification System (USCS)
 for Legend and information not noted.

Drilling Contractor: Weeks Drilling & Pump Co.

MW Installed: Y ☒ N ☐ if no, boring backfilled with:

Driller's Name: Tim Teller

Cement ☐ Bentonite: Cement ☐ Grout ☐ Chips ☐

Drilling Method: 8-in Hollow-Stem Auger

Auger Depth, ft: 15.0 Total Depth, ft: 15.0

Sampling Method: CMSS

Hammer weight / fall: 140 lbs / 30 inch

Notes:

Sample	Inches Recovered	Blows / 6 in	Sampler Type	Water Levels	PID (ppm)	Odor	Discoloration	Elevation	Depth in Feet	Graphic Log	Gravel %	Sand %	Silt %	Clay %	Lithologic Description and Drilling Comments:
								69.4							
								69.1							ASPHALT: over base rock.
								67.4							CLAY (CL): dark gray, moist to wet.
								64.4	5						Light brown, increasing silt content.
					0			63.4				50	50		SILT (ML): brown, minor very fine to fine grained sand, moist to wet.
						No	No					90	10		SAND with Silt (SP-SM): brown, fine grained sand, wet.
								59.9							SANDY SILT (ML): brown, very fine to fine grained sand, moist to wet.
					0			59.0	10			20	80		CLAY (CL): gray, moist.
								54.4	15			20	80		
															TOTAL DEPTH = 15.0 FEET

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BORING LOG MW-13

Weeks Drilling & Pump Co., Inc.
 6100 Sebastopol Road,
 Sebastopol, California 95473
 Job Number: 01203340.00

Figure:

Appendix A
 MW-13

1 of 1

SCS-SANTA ROSA BORING LOG 01203340.00.GPJ SCS-SANTA ROSA.GDT 03/16/05

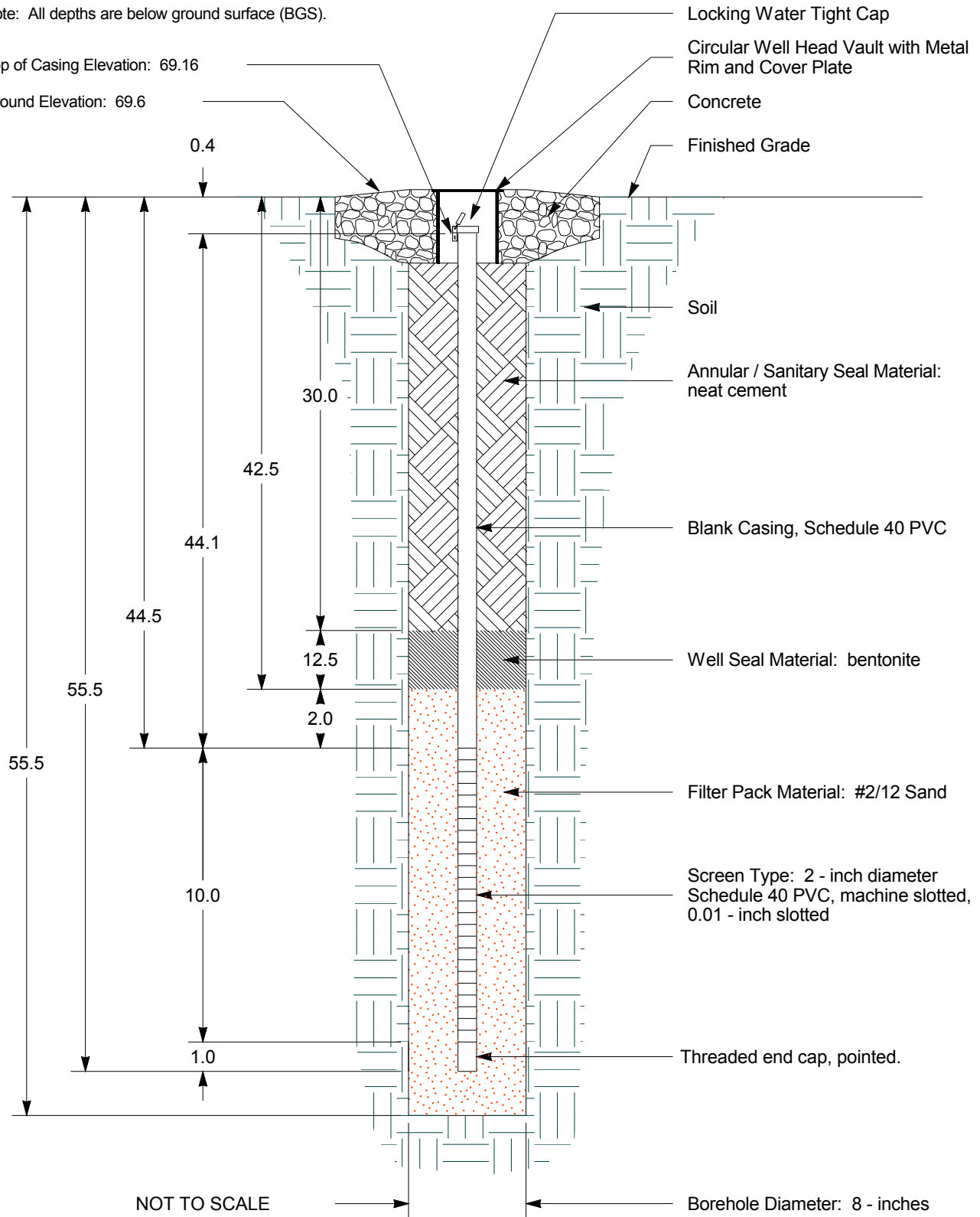
Appendix B

Well Completion Diagrams for MW-10D through MW-13

Note: All depths are below ground surface (BGS).

Top of Casing Elevation: 69.16

Ground Elevation: 69.6



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WELL COMPLETION DIAGRAM FOR MW-10D

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

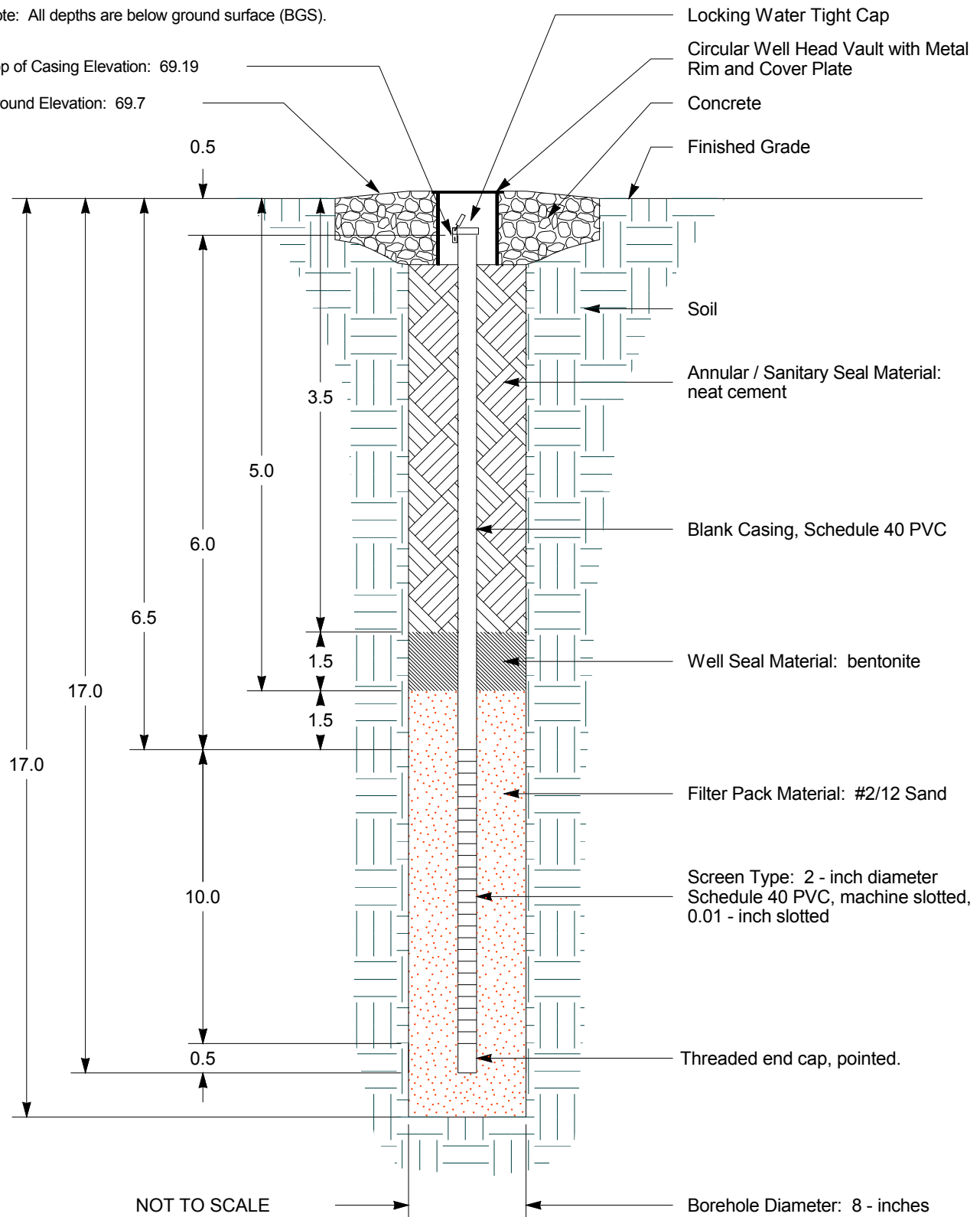
Figure:

Appendix B
MW-10D

Note: All depths are below ground surface (BGS).

Top of Casing Elevation: 69.19

Ground Elevation: 69.7



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WELL COMPLETION DIAGRAM FOR MW-11

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

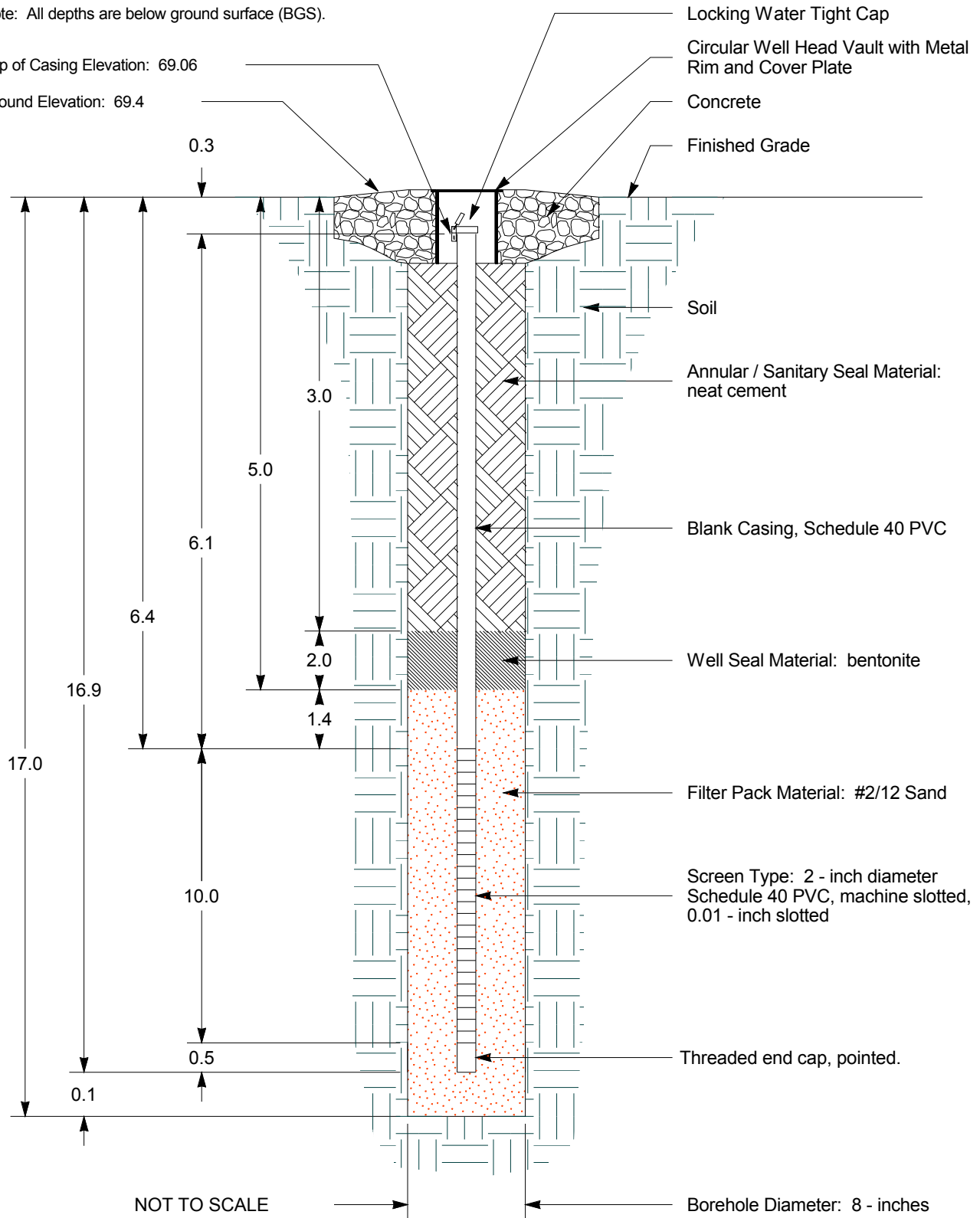
Figure:

Appendix B
MW-11

Note: All depths are below ground surface (BGS).

Top of Casing Elevation: 69.06

Ground Elevation: 69.4



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WELL COMPLETION DIAGRAM FOR MW-12

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

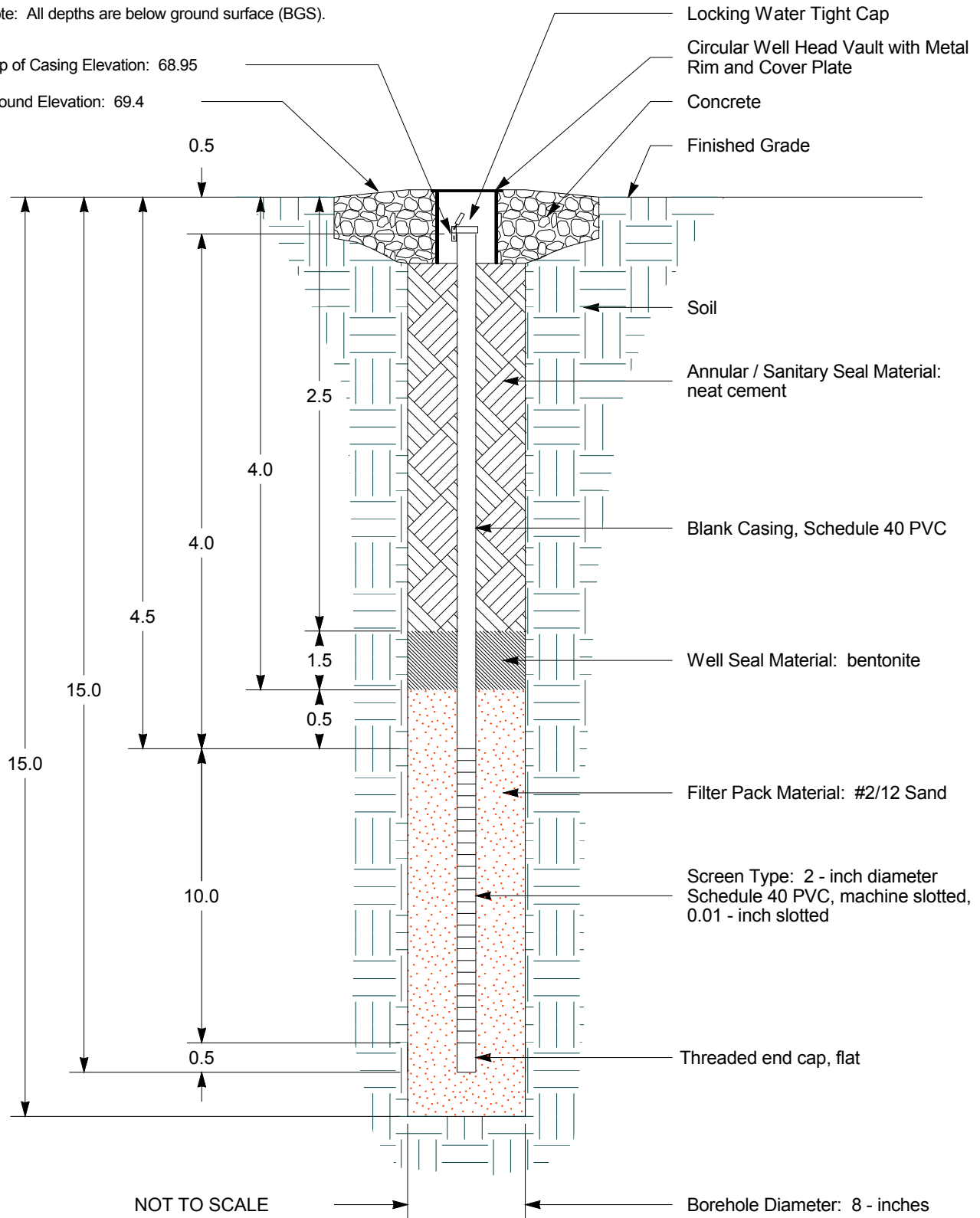
Figure:

Appendix B
MW-12

Note: All depths are below ground surface (BGS).

Top of Casing Elevation: 68.95

Ground Elevation: 69.4



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WELL COMPLETION DIAGRAM FOR MW-13

Weeks Drilling & Pump Co., Inc.
6100 Sebastopol Road,
Sebastopol, California 95473
Job Number: 01203340.00

Figure:

Appendix B
MW-13

Appendix C

Well Development Records for February 2 and March 21, 2005
Well Purge Records for February 7, March 21, and April 5, 2005

[illegible]

WELL PURGE RECORD

2005 - 1st Quarter

WELL NUMBER

MW- 4D

PROJECT

Weeks Drilling & Pump Co., Inc.

JOB NUMBER

01203340.00

SITE

6100 Sebastopol Road,

RECORDED BY

Amy Yardley

PURGING
METHOD

SAMPLING
METHOD

HAND PUMP

SUBMERSIBLE PUMP

BAILER

OTHER

X

X

PURGING CRITERIA

Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized ($\pm 10\%$), or until dry.

REMARKS

* Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's).

CASING DIAMETER (D_c): 2.0

DEPTH TO:

WATER (h): 47.80

NAPL: n.a.*

NAPL THICKNESS: n.a.*

SCREEN DEPTH:

TOP: 40.0

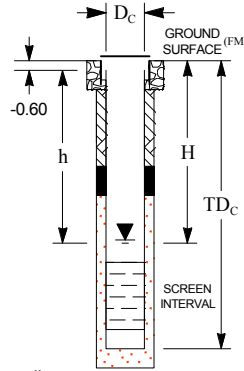
BOTTOM: 50.0

TOTAL DEPTH (TD_c): 50.00

Diameters in (inches) : Depths in (feet)

ONE CASING VOLUME:

$[TD_c - H] [3.14 (D_c / 2)^2] [7.48 \text{ gal/ft}^3]$: 0.26 gallons



DATE OF SAMPLING:

2/7/2005

WEATHER:

Partly Cloudy

TAGGED WATER LEVELS FROM TOC:

47.5 / 47.8

TAGGED WELL DEPTH FROM TOC:

50.3

PURGE VOLUME (3 CASING VOLUMES):

0.8 gallons

DEPTH TO WATER FOR 80% RECHARGE:

48.12 ft. below TOC

TIME OF SAMPLING:

15:10

DEPTH TO WATER AT TIME OF SAMPLING:

47.93 ft. below TOC

APPEARANCE OF SAMPLE:

Slightly cloudy

LABORATORY:

Analytical Sciences

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

PURGING DATA

CUMULATIVE TOTAL REMOVED

WATER CHARACTERISTICS

COMMENTS

DATE	TIME		WATER REMOVED (GAL)	GAL	CASING VOLUMES	pH	CONDUCT- TIVITY (mmhos/cm)	TURBIDITY (NTU)	TEMPER- ATURE (°C)	DISSOLVED OXYGEN (ppm)	
	BEGIN	FINISH									

2/7/05	09:50	10:15	0.75	0.75	2.87	7.87	0.700	*MLE	18.2	0.52	Hand Bailed
--------	-------	-------	------	------	------	------	-------	------	------	------	-------------

WELL NUMBER

MW-7

PROJECT

Weeks Drilling & Pump Co., Inc.

JOB NUMBER

01203340.00

SITE

6100 Sebastopol Road,

RECORDED BY

J. Greenlee / A. Yardley

PURGING METHOD

SAMPLING METHOD

PURGING CRITERIA Minimum of 3 wetted casing volumes (or 5 gallons minimum for 2" dia. wells), until water parameters (pH, temp., cond.) have stabilized ($\pm 10\%$), or until dry.

REMARKS

* Oil/water interface probe used to check for NAPLs; MLE = Meter Limit Exceeded, i.e. >999 NTU's.

CASING DIAMETER (D_C): 2.0

DEPTH TO:

WATER (h): 4.28

NAPL: n.a.*

NAPL THICKNESS: n.a.*

SCREEN DEPTH:

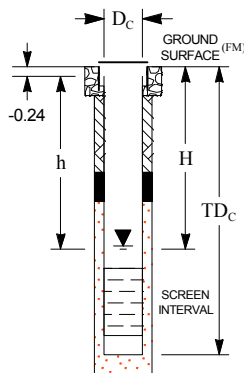
TOP: 5.0

BOTTOM: 15.0

TOTAL DEPTH (TD_C): 15.00

Diameters in (inches) : Depths in (feet)

ONE CASING VOLUME:
 $[TD_C - H] [3.14 (D_C / 2)^2] [7.48 \text{ gal/ft}^3]$: 1.71 gallons



DATE OF SAMPLING: 5/6/2005

WEATHER: Overcast

TAGGED WATER LEVELS FROM TOC: 4.28 / 4.28

TAGGED WELL DEPTH FROM TOC: 15.45

PURGE VOLUME (3 CASING VOLUMES): 5.1 gallons

DEPTH TO WATER FOR 80% RECHARGE: 6.38 ft. below TOC

TIME OF SAMPLING: 15:50

DEPTH TO WATER AT TIME OF SAMPLING: 4.68 ft. below TOC

APPEARANCE OF SAMPLE: Clear

LABORATORY: Analytical Sciences

SEE CHAIN OF CUSTODY FORM FOR ANALYTICAL INFORMATION.

[illegible]

Appendix D

Well Survey Report dated March 9, 2005

**JACOBS LAND SURVEYING
1625 PERSEUS CT.
PETALUMA, CA. 94954
(707) 782-0733**

DATE: 03-09-05

Job # 03-918-S

TO: SCS Engineers
3645 Westwind Blvd.
Santa Rosa, California 95403

RE: Weeks Drilling & Pump
6100 Sebastopol Rd.
Sebastopol, Ca.
Your Job No. 3340.00

On 03-09-05 this office ran a closed level loop with a Zeiss Ni2 Auto Level from a previously established Temporary Benchmark, elevation 69.86, NGVD 1929 datum, yielding the following well elevations.

MW#	Rim	Top Casing	Comments
MW-10-D	69.57	69.16	(S) (N)
MW-11	69.66	69.19	(S) (N)
MW-12	69.41	69.06	(S) (N) (P)
MW-13	69.44	68.95	(S) (N)

KEY (A) = Allen head bolt (L) = Large bolt (S) = Small bolt
(N)(E)(S)(W) = Direction (B) = Black mark (BN) = Black mark/notch
(M) = Missing/stripped bolt (OC) = Outer casing (HP) = High point
(P) = Pressure (OG) = Original grade

Temporary Benchmark: Corner, end of concrete sidewalk at SE corner office.

Job Benchmark: USC&GS monument Y 204, published elevation 65.55, 1929 NGVD.

REMARKS:

All wells recovered and observed were in good condition and were resealed as found.

Steven H. Jacobs PLS 5296 Lic. Exp. 12-31-05



Appendix E

Analytical Sciences Report #5012106 dated January 31, 2005
Analytical Sciences Report #5020801 dated February 28, 2005
Analytical Sciences Report #5032804 dated April 8, 2005
Analytical Sciences Report #5050903 dated May 20, 2005



Report Date: January 28, 2005

Stephen Knuttel
SCS Engineers
3645 Westwind Blvd.
Santa Rosa, CA 95403

LABORATORY REPORT

Project Name: **Weeks Drilling & Pump Co.** **01203340.00**

Lab Project Number: **5012106**

This 13 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director



TPH Gasoline in Soil

Lab #	Sample ID	Analysis	Result (mg/kg)	RDL (mg/kg)
27886	MW-11@6.0'	TPH/Gasoline	ND	1.0

Date Sampled: 01/19/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	

Lab #	Sample ID	Analysis	Result (mg/kg)	RDL (mg/kg)
27887	MW-11@11.0'	TPH/Gasoline	ND	1.0

Date Sampled: 01/19/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	

Lab #	Sample ID	Analysis	Result (mg/kg)	RDL (mg/kg)
27888	MW-12@7.0'	TPH/Gasoline	68	10

Date Sampled: 01/20/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	

Lab #	Sample ID	Analysis	Result (mg/kg)	RDL (mg/kg)
27889	MW-12@11.0'	TPH/Gasoline	ND	1.0

Date Sampled: 01/20/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	



<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (mg/kg)</u>	<u>RDL (mg/kg)</u>
27890	MW-13@6.0'	TPH/Gasoline	ND	1.0

Date Sampled: 01/20/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	

<u>Lab #</u>	<u>Sample ID</u>	<u>Analysis</u>	<u>Result (mg/kg)</u>	<u>RDL (mg/kg)</u>
27891	MW-13@11.0'	TPH/Gasoline	ND	1.0

Date Sampled: 01/20/05	Date Analyzed: 01/21/05	QC Batch #: 5243
Date Received: 01/21/05	Method: EPA 8015M	



Volatile Hydrocarbons by GC/MS in Soil

Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27886	MW-11 @ 6.0'	benzene	ND	2.0
		toluene	ND	2.0
		ethyl benzene	2.4	2.0
		m,p-xylene	ND	2.0
		o-xylene	ND	2.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	50
methyl tert-butyl ether (MTBE)	ND	2.0
di-isopropyl ether (DIPE)	ND	2.0
ethyl tert-butyl ether (ETBE)	ND	2.0
tert-amyl methyl ether (TAME)	ND	2.0

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d ₈ (20)	19.6	98.0	70 – 130
4-bromofluorobenzene (20)	19.5	97.5	70 – 130

Date Sampled: 01/19/05
Date Received: 01/21/05

Date Analyzed: 01/21/05
Method: EPA 8260B

QC Batch #: 5250



Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27887	MW-11 @ 11.0'	benzene	ND	2.0
		toluene	ND	2.0
		ethyl benzene	ND	2.0
		m,p-xylene	ND	2.0
		o-xylene	ND	2.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	50
methyl tert-butyl ether (MTBE)	ND	2.0
di-isopropyl ether (DIPE)	ND	2.0
ethyl tert-butyl ether (ETBE)	ND	2.0
tert-amyl methyl ether (TAME)	ND	2.0

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d ₈ (20)	19.7	98.5	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130

Date Sampled: 01/19/05
Date Received: 01/21/05

Date Analyzed: 01/21/05
Method: EPA 8260B

QC Batch #: 5250



Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27888	MW-12@ 7.0'	benzene	150	50
		toluene	ND	50
		ethyl benzene	1,100	50
		m,p-xylene	5,500	50
		o-xylene	ND	50

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	1,000
methyl tert-butyl ether (MTBE)	ND	50
di-isopropyl ether (DIPE)	ND	50
ethyl tert-butyl ether (ETBE)	ND	50
tert-amyl methyl ether (TAME)	ND	50

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.1	100	70 – 130
toluene-d ₈ (20)	19.4	97.0	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled: 01/20/05
Date Received: 01/21/05

Date Analyzed: 01/22/05
Method: EPA 8260B

QC Batch #: 5250



Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27889	MW-12@ 11.0'	benzene	ND	2.0
		toluene	ND	2.0
		ethyl benzene	2.1	2.0
		m,p-xylene	ND	2.0
		o-xylene	ND	2.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	50
methyl tert-butyl ether (MTBE)	ND	2.0
di-isopropyl ether (DIPE)	ND	2.0
ethyl tert-butyl ether (ETBE)	ND	2.0
tert-amyl methyl ether (TAME)	ND	2.0

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d ₈ (20)	19.4	97.0	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130

Date Sampled: 01/20/05
Date Received: 01/21/05

Date Analyzed: 01/21/05
Method: EPA 8260B

QC Batch #: 5250



Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27890	MW-13@ 6.0'	benzene	ND	2.0
		toluene	ND	2.0
		ethyl benzene	ND	2.0
		m,p-xylene	ND	2.0
		o-xylene	ND	2.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	50
methyl tert-butyl ether (MTBE)	ND	2.0
di-isopropyl ether (DIPE)	ND	2.0
ethyl tert-butyl ether (ETBE)	ND	2.0
tert-amyl methyl ether (TAME)	ND	2.0

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d ₈ (20)	19.4	97.0	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled: 01/20/05
Date Received: 01/21/05

Date Analyzed: 01/22/05
Method: EPA 8260B

QC Batch #: 5250



Lab #	Sample ID	Compound Name	Result (ug/kg)	RDL (ug/kg)
27891	MW-13@ 11.0'	benzene	ND	2.0
		toluene	ND	2.0
		ethyl benzene	ND	2.0
		m,p-xylene	ND	2.0
		o-xylene	ND	2.0

Oxygenated Gasoline Additives

tert-butyl alcohol (TBA)	ND	50
methyl tert-butyl ether (MTBE)	ND	2.0
di-isopropyl ether (DIPE)	ND	2.0
ethyl tert-butyl ether (ETBE)	ND	2.0
tert-amyl methyl ether (TAME)	ND	2.0

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.7	104	70 – 130
toluene-d ₈ (20)	19.7	98.5	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Date Sampled: 01/20/05
Date Received: 01/21/05

Date Analyzed: 01/22/05
Method: EPA 8260B

QC Batch #: 5250



Total Lead in Soil

Lab #	Sample ID	Analysis	Result (mg/kg)	RDL (mg/kg)
27888	MW-12@7.0'	Lead (Pb)	3.8	3.0

Date Sampled: 01/20/05	Date Digested: 01/21/05	QC Batch #: 5249
Date Received: 01/21/05	Date Analyzed: 01/21/05	
Method: EPA 3050/6010		



LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5243

Lab Project #: 5012106

Sample ID	Compound	Result (mg/kg)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (mg/kg)	Spike Level	% Recv.
27867	CMS	TPH/Gas		NS	
	CMS	Benzene	0.088	0.100	88.0
	CMS	Toluene	0.089	0.100	89.4
	CMS	Ethyl Benzene	0.088	0.100	88.4
	CMS	Xylenes	0.265	0.300	88.4

Sample #	Sample ID	Compound	Result (mg/kg)	Spike Level	% Recv.	RPD
27867	CMSD	TPH/Gas		NS		
	CMSD	Benzene	0.096	0.100	96.3	9.0
	CMSD	Toluene	0.095	0.100	94.5	5.6
	CMSD	Ethyl Benzene	0.092	0.100	91.6	3.6
	CMSD	Xylenes	0.272	0.300	90.7	2.5

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



QC Batch #: 5250

Lab Project #: 5012106

Sample ID	Compound Name	Result (ug/kg)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.4	102	70 – 130
toluene-d ₈ (20)	19.7	98.5	70 – 130
4-bromofluorobenzene (20)	19.4	97.0	70 – 130

Sample ID	Compound Name	Result (ug/kg)	Spike Level	% Recv.
LCS	1,1-dichloroethene	28.5	25.0	114
LCS	benzene	27.3	25.0	109
LCS	trichloroethene	23.9	25.0	95.6
LCS	toluene	26.6	25.0	106
LCS	chlorobenzene	26.4	25.0	106

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.3	102	70 – 130
toluene-d ₈ (20)	19.8	99.0	70 – 130
4-bromofluorobenzene (20)	19.1	95.5	70 – 130



Sample ID	Compound Name	Result (ug/kg)	Spike Level	% Recv.	RPD
LCSD	1,1-dichloroethene	28.0	25.0	112	1.8
LCSD	benzene	26.6	25.0	106	2.6
LCSD	trichloroethene	23.4	25.0	93.6	2.1
LCSD	toluene	25.8	25.0	103	3.1
LCSD	chlorobenzene	25.7	25.0	103	2.7

Surrogates	Result (ug/kg)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	20.2	101	70 – 130
toluene-d ₈ (20)	19.8	99.0	70 – 130
4-bromofluorobenzene (20)	19.2	96.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; No Recovery

QC Batch #: 5249

Lab Project #: 5012106

Sample ID	Compound	Result (mg/kg)
MB	Lead (Pb)	ND

Sample ID	Compound	Result (mg/kg)	Spike Level	% Recv.
LCS	Lead (Pb)	25.6	25.0	102

Sample ID	Compound	Result (mg/kg)	Spike Level	% Recv.	RPD
LCSD	Lead (Pb)	25.8	25.0	104	0.78

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



CHAIN OF CUSTODY

Primary and Secondary
P.O. Box 750336, Petaluma, CA 94975-0336
110 Liberty Street, Petaluma, CA 94952
(707) 769-3128



CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS	CONTACT: <u>CHARIS THOMPSON</u>		
ADDRESS: 3645 WESTWIND BOULEVARD	COMPANY NAME: <u>WEEKS PUMP & PUMP CO.</u>		
SANTA ROSA, CA 95403	ADDRESS: <u>P.O. Box 176</u>		
CONTACT: <u>STEVEN KUNDEL</u>	PHONE#: <u>SEBASTIAN</u>		
PHONE#: (707) 546-9461	FAX #: <u></u>		
FAX #: (707) 544-5769			

TURNAROUND TIME (check one)	
MOBILE LAB	
SAME DAY	24 HOURS
48 HOURS	72 HOURS
5 DAYS	NORMAL

LAB PROJECT NUMBER: 5012106

SCS ENGINEERS PROJECT NAME: WEEKS PUMP & PUMP CO.

SCS ENGINEERS PROJECT NUMBER: 01203340.00

GLOBAL ID:

COOLER TEMPERATURE: °C

COC:

GEO TRACKER EDF: Y N

ANALYSIS											PAGE ____ OF ____									
ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/PTX SAMPLE	TPH DIESEL/ MOTOR OIL EPA 801.5M/8020	VOLATILE HYDROCARBONS EPA 8015M	EPA 8260 (FULL LIST) + Oxy / Fuel Additives	BTEX & OXYGENATES + POLYAROMATICS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS EPA 8270	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG 9M 820F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	TOTAL LEAD	COMMENTS	LAB SAMPLE #
1	MW-11 @ 6.0	11/1/05	1515	SOIL			X	X			X									27886
2	MW-11 @ 11.0	"	1530	"			X	X			X							X		27887
3	MW-12 @ 7.0	20/1/05	0850	"			X	X			X									27888
4	MW-12 @ 11.0'	"	0900	"			X	X			X									27889
5	MW-13 @ 8.0'	"	1115	"			X	X			X									27890
6	MW-13 @ 11.0'	"	1130	"			X	X			X									27891
7																				
8																				
9																				
10																				
11																				

SIGNATURES			
RELINQUISHED BY:	SAMPLED BY:	RECEIVED BY LABORATORY:	
<u>STEVEN KUNDEL</u>	<u>CHARIS THOMPSON</u>	<u>WEEKS PUMP & PUMP CO.</u>	
SIGNATURE	DATE	SIGNATURE	DATE
	2/2/05 11:15		1/2/05 11:15



Report Date: February 28, 2005

Kevin Coker
SCS Engineers
3645 Westwind Boulevard
Santa Rosa, CA 95403

LABORATORY REPORT

Project Name: **Weeks Drilling & Pump** **01203340.00**

Lab Project Number: **5020801**

This 7 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director



TPH Gasoline & MBTEX in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28173	MW-1	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28174	MW-2	TPH/Gasoline	ND	50
		MTBE	3.1	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28175	MW-3	TPH/Gasoline	87	50
		MTBE	4.7	2.5
		Benzene	ND	0.5
		Toluene	1.1	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	3.2	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28176	MW-4D	TPH/Gasoline	120	50
		MTBE	ND	2.5
		Benzene	0.55	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	2.8	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28177	MW-5	TPH/Gasoline	2,600	500
		MTBE	31	25
		Benzene	200	5.0
		Toluene	ND	5.0
		Ethyl Benzene	120	5.0
		Xylenes	ND	15

Date Sampled: 02/07/05	Date Analyzed: 02/14/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28178	MW-6	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28179	MW-7	TPH/Gasoline	110	50
		MTBE	8.3	2.5
		Benzene	1.0	0.5
		Toluene	0.62	0.5
		Ethyl Benzene	1.1	0.5
		Xylenes	1.8	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28180	MW-8	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28181	MW-9	TPH/Gasoline	280,000	10,000
		MTBE	1,400	500
		Benzene	7,300	100
		Toluene	11,000	100
		Ethyl Benzene	6,700	100
		Xylenes	28,000	300

Date Sampled: 02/07/05	Date Analyzed: 02/14/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28182	MW-10D	TPH/Gasoline	6,000	500
		MTBE	42	25
		Benzene	500	5.0
		Toluene	23	5.0
		Ethyl Benzene	73	5.0
		Xylenes	200	15

Date Sampled: 02/07/05	Date Analyzed: 02/14/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28183	MW-11	TPH/Gasoline	17,000	500
		MTBE	130	25
		Benzene	55	5.0
		Toluene	74	5.0
		Ethyl Benzene	560	5.0
		Xylenes	710	15

Date Sampled: 02/07/05	Date Analyzed: 02/08/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28184	MW-12	TPH/Gasoline	33,000	2,500
		MTBE	270	100
		Benzene	1,200	20
		Toluene	520	20
		Ethyl Benzene	2,600	20
		Xylenes	3,300	60

Date Sampled: 02/07/05	Date Analyzed: 02/08/05, 02/14/05	QC Batch #: 5296
Date Received: 02/08/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
28185	MW-13	TPH/Gasoline	240	50
		MTBE	ND	2.5
		Benzene	5.1	0.5
		Toluene	11	0.5
		Ethyl Benzene	11	0.5
		Xylenes	38	1.5

Date Sampled: 02/07/05
Date Received: 02/08/05

Date Analyzed: 02/14/05
Method: EPA 5030/8015M/8020

QC Batch #: 5296



LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5296

Lab Project #: 5020801

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
28186	CMS	TPH/Gas		NS	
	CMS	Benzene	10.2	10.0	102
	CMS	Toluene	10.5	10.0	105
	CMS	Ethyl Benzene	10.6	10.0	106
	CMS	Xylenes	31.0	30.0	103

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
28186	CMSD	TPH/Gas		NS		
	CMSD	Benzene	10.2	10.0	102	0.64
	CMSD	Toluene	10.5	10.0	105	0.04
	CMSD	Ethyl Benzene	10.6	10.0	106	0.41
	CMSD	Xylenes	31.2	30.0	104	0.87

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



Analytical Sciences
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110 Liberty Street, Petaluma, CA 94952
(707) 769-3128



CHAIN OF CUSTODY

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS	CONTACT: Ward Thompson	SCS ENGINEERS PROJECT NAME: Weeks Drilling & Pump	LAB PROJECT NUMBER: 5020801
ADDRESS: 3645 WESTWIND BOULEVARD	COMPANY NAME: Weeks Drilling & Pump	SCS ENGINEERS PROJECT NUMBER: 01203340.00	
SANTA ROSA, CA 95403	ADDRESS: 600 Sebastopol Rd.		
CONTACT: Kevin Coker	PHONE#: (707) 546-9461		
	FAX #: (707) 544-5769		

GEOTracker EDF: <u>X</u> <u>Y</u> <u>N</u>	
GLOBAL ID: T0609700487	
MOBILE LAB	COOLER TEMPERATURE
SAME DAY	24 HOURS
48 HOURS	72 HOURS
5 DAYS	NORMAL <input checked="" type="checkbox"/>
COC	

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX & MTBE EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260 (FULL LIST)	EPA 8260 Full List + Oxy / Fuel Additives	BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 6 LUFT METALS	TOTAL LEAD	COMMENTS	LAB SAMPLE #
1	MW-1	2/07/05	1045	LIQ	4	Yes	X													28173
2	MW-2	2/07/05	1115	LIQ	4	Yes	X													28174
3	MW-3	2/07/05	300	LIQ	4	Yes	X													28175
4	MW-4D	2/07/05	310	LIQ	4	Yes	X													28176
5	MW-5	2/07/05	1200	LIQ	4	Yes	X													28177
6	MW-6	2/07/05	245	LIQ	4	Yes	X													28178
7	MW-7	2/07/05	210	LIQ	4	Yes	X													28179
8	MW-8	2/07/05	1100	LIQ	4	Yes	X													28180
9	MW-9	2/07/05	215	LIQ	4	Yes	X													28181
10	MW-10D	2/07/05	355	LIQ	4	Yes	X													28182
11	MW-11	2/07/05	230	LIQ	4	Yes	X													28183

PAGE 1 OF 2

RELINQUISHED BY: Tanya Gallegos	DATE: 2/8/05	TIME: 10:50
RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:	DATE:	TIME:
RECEIVED BY:	DATE:	TIME:

RECEIVED BY LABORATORY:

[Signature]

SIGNATURE

DATE

TIME

2-8-05 10:50



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110 Liberty Street, Petaluma, CA 94952
(707) 769-3128



CHAIN OF CUSTODY

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS	CONTACT: Ward Thompson	SCS ENGINEERS PROJECT NAME: Weeks Drilling & Pump	LAB PROJECT NUMBER: 5020901
ADDRESS: 3845 WESTWIND BOULEVARD	COMPANY NAME: Weeks Drilling & Pump	SCS ENGINEERS PROJECT NUMBER: 01203340-00	
SANTA ROSA, CA 95403	ADDRESS: 6100 Sebastopol Rd.		
CONTACT: Kevin Coker	SEBASTOPOL, CA 95472		
PHONE#: (707) 546-9461	PHONE#: 707-542-3212		
FAX #: (707) 544-5769	FAX #:		

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260 (FULL LIST)	EPA 8260 Full List + Oxy / Fuel Additives	BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 6620F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	TOTAL LEAD	COMMENTS	LAB SAMPLE #
1	MW-12	2/8/05	405	LIQ	4	Yes	X													28184
2	MW-13	2/8/05	350	LIQ	4	Yes	X													28185
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				

RELINQUISHED BY: Tanya Gallegos	DATE: 2/8/05	TIME: 10:50
RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:	DATE:	TIME:
RECEIVED BY:	DATE:	TIME:

RECEIVED BY LABORATORY:	DATE: 2-8-05	TIME: 10:50
SIGNATURE: <i>[Signature]</i>	DATE:	TIME:



Report Date: April 8, 2005

Kevin Coker
SCS Engineers
3645 Westwind Boulevard
Santa Rosa, CA 95403

LABORATORY REPORT

Project Name: **Weeks Drilling** **01203340.00**

Lab Project Number: **5032804**

This 5 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director



TPH Gasoline & BTEX in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29057	MW – 9	TPH/Gasoline	65,000	1,000
		Benzene	3,700	100
		Toluene	2,900	100
		Ethyl Benzene	1,800	100
		Xylenes	2,600	300

Date Sampled: 03/25/05	Date Analyzed: 03/29/05, 03/30/05	QC Batch #: 5434
Date Received: 03/28/05	Method: EPA 5030/8015M/8020	

Oxygenated Gasoline Additives by GC/MS in Water

Lab #	Sample ID	Compound Name	Result (ug/L)	RDL (ug/L)
29057	MW – 9	tert-butyl alcohol (TBA)	ND	120
		methyl tert-butyl ether (MTBE)	23	5.0
		di-isopropyl ether (DIPE)	ND	5.0
		ethyl tert-butyl ether (ETBE)	ND	5.0
		tert-amyl methyl ether (TAME)	ND	5.0

Surrogates (ug/L)	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.9	116	70 – 130

Date Sampled: 03/25/05	Date Analyzed: 03/30/05	QC Batch #: 5436
Date Received: 03/28/05	Method: EPA 8260B	



LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5434

Lab Project #: 5032804

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
29058	CMS	TPH/Gas		NS	
	CMS	Benzene	10.4	10.0	104
	CMS	Toluene	10.2	10.0	102
	CMS	Ethyl Benzene	10.5	10.0	105
	CMS	Xylenes	30.5	30.0	102

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
29058	CMSD	TPH/Gas		NS		
	CMSD	Benzene	10.5	10.0	105	1.4
	CMSD	Toluene	10.4	10.0	104	1.6
	CMSD	Ethyl Benzene	10.4	10.0	104	1.5
	CMSD	Xylenes	30.5	30.0	102	0.06

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



QC Batch #: 5436

Lab Project #: 5032804

Sample ID	Compound Name	Result (ug/L)
MB	1,1-dichloroethene	ND
MB	benzene	ND
MB	trichloroethene	ND
MB	toluene	ND
MB	chlorobenzene	ND

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	23.6	118	70 – 130
toluene-d ₈ (20)	20.5	103	70 – 130
4-bromofluorobenzene (20)	18.3	91.5	70 – 130

Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.
29063	CMS	1,1-dichloroethene	21.0	25.0	84.0
	CMS	benzene	23.0	25.0	92.0
	CMS	trichloroethene	20.1	25.0	80.4
	CMS	toluene	22.0	25.0	88.0
	CMS	chlorobenzene	21.8	25.0	87.2

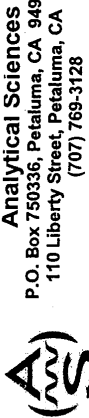
Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.7	109	70 – 130
toluene-d ₈ (20)	20.3	102	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130



Sample #	Sample ID	Compound Name	Result (ug/L)	Spike Level	% Recv.	RPD
29063	CMSD	1,1-dichloroethene	21.7	25.0	84.0	3.3
	CMSD	benzene	24.2	25.0	92.0	5.1
	CMSD	trichloroethene	21.8	25.0	80.4	8.1
	CMSD	toluene	22.8	25.0	88.0	3.6
	CMSD	chlorobenzene	24.4	25.0	87.2	11

Surrogates	Result (ug/L)	% Recovery	Acceptance Range (%)
dibromofluoromethane (20)	21.5	108	70 – 130
toluene-d ₈ (20)	19.5	97.5	70 – 130
4-bromofluorobenzene (20)	18.2	91.0	70 – 130

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



Analytical Sciences
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110 Liberty Street, Petaluma, CA 94952
(707) 769-3128

CHAIN OF CUSTODY

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS	CONTACT: Chris Thompson	SCS ENGINEERS PROJECT NAME: Weeks drilling	LAB PROJECT NUMBER: 5032804
ADDRESS: 3645 WESTWIND BOULEVARD	COMPANY NAME: Weeks drilling	SCS ENGINEERS PROJECT NUMBER: 0103340-00	
SANTA ROSA, CA 95403	ADDRESS: P.O. Box 196		
CONTACT: Kevin Collier	PHONE#: (707) 546-9461		
PHONE#: (707) 546-9461	PHONE#: 542-3272		
FAX #: (707) 544-5769	FAX #:		

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	ANALYSIS	LAB SAMPLE #
1	NW-9	3-25	1200	Liq	4	Y	TPH/GAS/BTEX EPA 8015M/8020 TPH DIESEL / MOTOR OIL EPA 8015M VOLATILE HYDROCARBONS EPA 8260 (FULL LIST) + Oxy / Fuel Additives BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B OXYGENATED FUEL ADDITIVES EPA 8260M CHLORINATED SOLVENTS SEMI-VOLATILE HYDROCARBONS EPA 8270 TRPH / TOG SM 5520F / EPA 418.1M PESTICIDES / PCB'S EPA 8081 / 8141 / 8082 CAM 17 METALS / 5 LUFT METALS TOTAL LEAD 5045	27057
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

SIGNATURES	
RELINQUISHED BY:	DATE: 3-28-05 TIME: 12:04
RECEIVED BY:	DATE: 3-28-05 TIME: 12:04
RELINQUISHED BY:	DATE: 3-28-05 TIME: 12:04
RECEIVED BY:	DATE: 3-28-05 TIME: 12:04



Report Date: May 20, 2005

Kevin Coker
SCS Engineers
3645 Westwind Boulevard
Santa Rosa, CA 95403

LABORATORY REPORT

Project Name: **Weeks Drilling & Pump** **01203340.00**

Lab Project Number: **5050903**

This 6 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.
Laboratory Director



TPH Gasoline & MBTEX in Water

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29693	MW-1	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29694	MW-2	TPH/Gasoline	ND	50
		MTBE	3.7	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29695	MW-3	TPH/Gasoline	ND	50
		MTBE	5.7	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29696	MW-4D	TPH/Gasoline	52	50
		MTBE	ND	2.5
		Benzene	1.0	0.5
		Toluene	0.5	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	2.2	1.5

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29697	MW-5	TPH/Gasoline	170	50
		MTBE	ND	2.5
		Benzene	21	0.5
		Toluene	ND	0.5
		Ethyl Benzene	14	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29698	MW-6	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29699	MW-7	TPH/Gasoline	ND	50
		MTBE	4.9	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29700	MW-8	TPH/Gasoline	ND	50
		MTBE	ND	2.5
		Benzene	ND	0.5
		Toluene	ND	0.5
		Ethyl Benzene	ND	0.5
		Xylenes	ND	1.5

Date Sampled: 05/05/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29701	MW-10D	TPH/Gasoline	3,200	500
		MTBE	ND	25
		Benzene	430	5.0
		Toluene	ND	5.0
		Ethyl Benzene	300	5.0
		Xylenes	20	15

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	



Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29702	MW-11	TPH/Gasoline	11,000	500
		MTBE	ND	25
		Benzene	26	5.0
		Toluene	80	5.0
		Ethyl Benzene	540	5.0
		Xylenes	620	15

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29703	MW-12	TPH/Gasoline	26,000	2,500
		MTBE	ND	100
		Benzene	2,100	20
		Toluene	210	20
		Ethyl Benzene	2,500	20
		Xylenes	1,800	60

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	

Lab #	Sample ID	Analysis	Result (ug/L)	RDL (ug/L)
29704	MW-13	TPH/Gasoline	53	50
		MTBE	ND	2.5
		Benzene	1.5	0.5
		Toluene	ND	0.5
		Ethyl Benzene	2.4	0.5
		Xylenes	2.0	1.5

Date Sampled: 05/06/05	Date Analyzed: 05/11/05	QC Batch #: 5523
Date Received: 05/09/05	Method: EPA 5030/8015M/8020	



LABORATORY QUALITY ASSURANCE REPORT

QC Batch #: 5523

Lab Project #: 5050903

Sample ID	Compound	Result (ug/L)
MB	TPH/Gas	ND
MB	MTBE	ND
MB	Benzene	ND
MB	Toluene	ND
MB	Ethyl Benzene	ND
MB	Xylenes	ND

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.
29693	CMS	TPH/Gas		NS	
	CMS	Benzene	9.57	10.0	95.7
	CMS	Toluene	10.0	10.0	100
	CMS	Ethyl Benzene	10.0	10.0	103
	CMS	Xylenes	29.5	30.0	98.3

Sample #	Sample ID	Compound	Result (ug/L)	Spike Level	% Recv.	RPD
29693	CMSD	TPH/Gas		NS		
	CMSD	Benzene	9.26	10.0	92.6	3.3
	CMSD	Toluene	9.65	10.0	96.5	3.9
	CMSD	Ethyl Benzene	9.93	10.0	99.3	3.9
	CMSD	Xylenes	28.4	30.0	94.9	3.6

MB = Method Blank; LCS = Laboratory Control Sample; CMS = Client Matrix Spike; CMSD = Client Matrix Spike Duplicate
NS = Not Spiked; OR = Over Calibration Range; NR = No Recovery



Analytical Sciences
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110 Liberty Street, Petaluma, CA 94952
(707) 769-3128



CHAIN OF CUSTODY

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS-ENVIRONET	CONTACT: Ward Thompson	LAB PROJECT NUMBER: 5050903	ENVIRONET PROJECT NAME: Weeks Drilling & Pump
ADDRESS: 3645 WESTWIND BOULEVARD	COMPANY NAME: Weeks Drilling & Pump	ENVIRONET PROJECT NUMBER: 01203340.00	GLOBAL ID: 10609700487
SANTA ROSA, CA 95403	ADDRESS: 100 Sebastopol Rd.	TURNAROUND TIME (check one)	
CONTACT: Kevin Coker	PHONE#: (707) 546-9461	MOBILE LAB	GEOTRACKER EDF: X_Y_N
PHONE#: (707) 546-9461	FAX #: (707) 544-5769	SAME DAY	GLOBAL ID: 10609700487
		48 HOURS	COOLER TEMPERATURE
		5 DAYS	°C
		NORMAL	COC

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	TIME	MATRIX	# CONT.	PRESV. YES/NO	ANALYSIS	LAB SAMPLE #
1	MN-1	5/5/05	308	LQ	4	Yes	TPH/GAS/TEX EPA 8015M/8020	29693
2	MN-2	5/5/05	345				MOTOR OIL EPA 8015M	29694
3	MN-3	5/5/05	250				VOLATILE HYDROCARBONS EPA 8260 (FULL LIST)	29695
4	MN-4D	5/6/05	340				BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	29696
5	MN-5	5/5/05	400				FUEL ADDITIVES EPA 8260M	29697
6	MN-6	5/5/05	225				CHLORINATED SOLVENTS EPA 8010 / EPA 8260B	29698
7	MN-7	5/6/05	350				SEMI-VOLATILE HYDROCARBONS EPA 8270	29699
8	MN-8	5/5/05	320				TRPH / TOG SM 5620F / EPA 418.1M	29700
9	MN-9	5/6/05	410				PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	29701
10	MN-10D	5/6/05	410				CAM 17 METALS / 5 LUFT METALS	29702
11	MN-11	5/6/05	400				TOTAL LEAD	

SIGNATURES	
RELINQUISHED BY: Due Burneson	SAMPLED BY: Amy Vandenberg
SIGNATURE	SIGNATURE
DATE: 5/9/05	DATE: 5/9/05
TIME: 11:00	TIME: 11:00
RECEIVED BY LABORATORY: J. Riccio	
SIGNATURE	
DATE: 5-9-05	
TIME: 11:00	



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P.O. Box 750336, Petaluma, CA 94975-0336
110 Liberty Street, Petaluma, CA 94952
(707) 769-3128



CHAIN OF CUSTODY

LAB PROJECT NUMBER: 5050903

SCS ENGINEERS PROJECT NAME: Weeks Drilling & Pump
SCS ENGINEERS PROJECT NUMBER: 01203340.00

TURNAROUND TIME (check one)
MOBILE LAB
SAME DAY
48 HOURS
5 DAYS
NORMAL ☒
COOLING TEMPERATURE
°C
COC
PAGE 2 OF 2

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME: SCS ENGINEERS	CONTACT: Ward Thompson	COMPANY NAME: Weeks Drilling & Pump	CONTACT: Ward Thompson
ADDRESS: 3645 WESTWIND BOULEVARD SANTA ROSA, CA 95403	ADDRESS: 6100 Sebastopol Rd. Sebastopol, CA.	PHONE#: 707-543-3272	FAX #:
CONTACT: Kevin Cox	PHONE#: (707) 546-9461	FAX #:	

ITEM	CLIENT SAMPLE I.D.	DATE SAMPLED	MATRIX	# CONT.	PRESV. YES/NO	TPH/GAS/BTEX EPA 8015M/8020	TPH DIESEL / MOTOR OIL EPA 8015M	VOLATILE HYDROCARBONS EPA 8260 (FULL LIST)	EPA 8260 Full List + Oxy / Fuel Additives	BTEX & OXYGENATES + PB SCAVENGERS EPA 8260B	OXYGENATED FUEL ADDITIVES EPA 8260M	CHLORINATED SOLVENTS	SEMI-VOLATILE HYDROCARBONS EPA 8270	TRPH / TOG SM 5520F / EPA 418.1M	PESTICIDES / PCB'S EPA 8081 / 8141 / 8082	CAM 17 METALS / 5 LUFT METALS	TOTAL LEAD	COMMENTS	LAB SAMPLE #
1	MW-12	5/6/05	LIQ	4	YES	X													29703
2	MW-13	5/6/05	LIQ	4	YES	X													29704
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			

SIGNATURES			
RELINQUISHED BY: Amy Vandenbergh	DATE: 5/9/05	TIME:	
RECEIVED BY: Sue Borden	DATE: 5/9/05	TIME:	
RELINQUISHED BY: Sue Borden	DATE: 5/9/05	TIME:	
RECEIVED BY:	DATE:	TIME:	

RECEIVED BY LABORATORY:
DATE: 5-9-05 11:00
SIGNATURE: DATE: TIME:

Appendix F

Standard Soil and Water Sampling Procedures and QA/QC Protocol

**STANDARD
SOIL AND WATER SAMPLING PROCEDURES
AND QA/QC PROTOCOL**

December 15, 2003

**SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
STANDARD SOIL SAMPLING PROCEDURES**

The following outline describes the standard equipment and procedures used by SCS Engineers (SCS) personnel for the collection of soil samples for laboratory analysis.

Equipment

Modified California split-spoon drive sampler, standard penetration sampler, or direct push core barrel (Drill rig sampling)

Drive sampler (hand auger samples)

Typical 1.5-inch to 2.0-inch diameter by 6.0 inch long brass or stainless steel liners and plastic end-caps. Teflon sheets or aluminum foil will also be used for samples suspected of containing volatile compounds (gasoline, aromatic hydrocarbons, solvents, etc.)

Appropriate sample holders will be used for samples suspected of containing volatile compounds (gasoline, aromatic hydrocarbons, solvents, etc.) when EPA Method 5035 sampling is required by the regulatory agency. Standard sample containers will be used when field preservation occurs for EPA Method 5035 compliance.

Typical 1.5-inch to 2.5-inch diameter by 6.0 inch long plastic or metal liners for direct push core barrel.

PID organic vapor analyzer (OVA) or equivalent Field Detector

Sampler and Sample Container Cleaning Equipment:

- Stiff-bristle brushes

- Buckets

- Detergent (Non-phosphate detergent recommended)

- Deionized/potable water

Insulated sample storage and shipping containers (ice chests) and blue ice

Insulated sample storage and shipping containers (ice chests) and dry ice for EPA Method 5035 sample holders which cannot be delivered to the laboratory within 48 hours for preservation

Personal protective equipment (generally level D protection).

General Sampling Procedures

Soil samples are collected in accordance with regulatory guidance. Soil sampling procedures are updated as new guidance is provided by regulatory agencies. Sampling equipment (i.e., sample liners, auger bits, sampling devices) are pre-washed as necessary with a brush in a detergent solution, followed by double rinsing with distilled or deionized water prior to each sampling event. All new sample liners will have been pre-washed prior to use. All samples are collected in such a manner as to minimize the volatilization or oxidation due to agitation and/or mixing upon handling.

Soil samples collected by hand augering for lithologic logging, and for chemical and physical analyses are typically obtained by pounding the sample tube into the soil being tested. If an auger hole is drilled with a motorized drill rig, samples are typically collected using a drive sampler, which is driven approximately 18 to 24 inches below the depth of the auger bit. The sampling methodology may be adjusted on a case-by-case basis, depending on the suspected contaminant(s). Where required, EPA Method 5035 sample holders will be filled as rapidly as possible to prevent volatilization from either a sample sleeve or directly from the formation where feasible.

Soil samples collected from a backhoe bucket or from an accessible pit or excavation (ramped or shored) are collected by removing excess material to expose as fresh as possible soil. The sample liner is then pushed into the soil until the liner is full. Where required, EPA Method 5035 sample holders will be filled as rapidly as possible to prevent volatilization directly from the formation or from the backhoe bucket after a small amount of material is removed to expose a fresh surface where feasible.

Standard metal liners will be submitted for analysis in those circumstances where EPA Method 5035 sample holders are deemed to be unusable (gravel or extremely dense material). EPA Method 5035 preservation times will still be required of the laboratory.

When utilizing the split spoon sampler with a drill rig, the portions of the soil sample recovered in additional liners are also examined and noted for any contamination and/or changes in lithology.

The soils, when required, are classified in accordance with the Unified Soil Classification System (USCS). Sample liner ends selected for analysis are typically covered with teflon sheets and sealed with plastic end caps, stored in a cooler (4° C), and transported to a California Department of Health Services Certified Analytical Laboratory for the requested analyses (except where there is no State certification for the analysis being conducted). If storage is required prior to delivery to the laboratory or laboratory courier, the samples are stored in a secure refrigerator prior to delivery. EPA Method 5035 sample holders used to comply with EPA Method 5035 sample collection procedures will be collected and stored in a cooler (4° C), and transported to a California Department of Health Services Certified Analytical Laboratory for preservation within 48 hours of sample collection. In the event the samples cannot be delivered to the Laboratory to meet the 48 hour preservation requirement, the samples will be placed in an ice chest with dry ice and kept frozen either in the ice chest with adequate dry ice or in a secure freezer until they can be delivered to the Laboratory for proper preservation. The Laboratory may receive the samples at the job site for field preservation, in which case standard sample tubes will be used.

All sample containers are labeled in the field. The sample labels will typically contain the following information:

Sample identification number (including depth and stratigraphic position where applicable)
Project name
Project address
Sampler initials
Date of collection
Other pertinent information

Chain-of-Custody documents are completed in the field and accompany the samples to the laboratory. The Chain-of-Custody document will typically contain the following information:

Sample identification number (including depth and stratigraphic position where applicable)
Project name
Project address
Project number
Sampler (printed and signed)
Date and time of collection (for each sample)
Matrix type (soil, water, etc.)
Analyses and turn-around-time requested
Billing Information
Other pertinent information

Stockpile Sampling

Discrete samples from thin stockpiles are collected in brass or stainless steel liners, by removing 6 inches to 1 foot of soil and driving the brass or stainless steel liner into the stockpile. Soil samples are collected from thick stockpiles containing volatile contaminants by either augering or otherwise excavating approximately one third to one half way into the pile and then driving the sample liner into the soil in the hole, or collecting a sample from the backhoe bucket. Surface or near surface samples will be collected from homogenized stockpiles containing non-volatile contaminants such as metals, motor oil, or oil and grease.

For final verification characterization, discrete soil samples will be collected at intervals required by regulation, or by the lead regulator for the disposal or treatment option selected. EPA Method 5035 sampling procedures, as indicated above, will be followed for discrete and/or verification sampling when directed by the regulatory agency and/or the receiving facility. EPA Method 5035 sampling procedures, as described above, will not be followed for composite sampling for disposal unless directed by the landfill(s) in order to profile the soil for disposal.

STANDARD GROUNDWATER SAMPLING PROCEDURES

The following outline describes the standard equipment and procedures which are used by SCS personnel for the collection of groundwater samples for laboratory analysis.

Monitoring Well Development

After monitoring wells are installed and prior to initial sampling of the wells, well development is conducted. Well development is conducted to create an effective filter pack around the well screen, to optimize hydraulic communication between the formation and the well screen, and to assist in restoring the natural water quality near the well. Well development is also conducted to remove fines and to remove any foreign materials introduced during drilling.

Well development will be conducted as follows:

1. Record the static water level and total well depth.
2. Set the pump and record the pumping rate. Pump until the turbidity reaches the desired level, typically measured using a turbidity meter.
3. Discontinue pumping and begin surging using a properly designed surge block and proper surging technique.
4. Measure and record well depth to determine the amount of fines and repeat Step 2.
5. Repeat surging and pumping until the well yields water of acceptable turbidity at the beginning of a pumping cycle.

Depending on the depth of the water, the hydraulic conductivity of the aquifer, and the diameter of the well, pumping may effectively achieve well development. Wells completed in very silty geologic units also may produce consistently turbid samples. Wells of this type will normally be considered to have been properly installed and developed and turbid water samples will be considered representative of mobile constituents in the aquifer.

Monitoring Well Sampling

Groundwater sampling and evaluation of monitoring wells begins by removal of the well caps and measuring water levels in all monitoring wells at a site with a water level indicator. The fluid in the well is then monitored for the presence of free floating material. If free product is present in the well, its thickness is measured using an oil-water interface probe. A program of free product removal may be initiated. A groundwater sample is typically not collected from any well with confirmed free floating product unless a directive to do so is received from the regulatory agency.

All monitoring wells are typically checked for free product until authorization has been received from the lead regulatory agency that checking for free product is no longer necessary. Water levels will continue to be checked until field measurements indicate that equilibrium has been achieved from which to compute the groundwater flow direction and gradient.

If free product is not present in the well being monitored, the well is purged, with groundwater parameters such as pH, conductivity, and temperature measured after each well volume removed. This process continues until parameters being measured such as pH, conductivity, and temperature, have generally stabilized (reproducible within 10%). As a general practice, a minimum of 3 well casing volumes or until the well goes dry constitutes adequate purging. For 2-inch diameter wells, a minimum of 5 gallons of water should be removed unless the well goes dry. Wells will be purged from least to most contaminated after the initial round of sampling. The purge pump will be placed near the top of the measured water table to assure that fresh water from the formation will move upward in the screen. Water will be purged from the well at a rate that does not cause recharge water to be excessively agitated. The purge pump will be lowered into the well as necessary to achieve the desired removal of groundwater.

Once a well has been adequately purged, a groundwater sample is collected using a disposable or pre-cleaned bailer. The groundwater sample is collected from the well in containers appropriate to the analyses being conducted. As examples, 1 liter amber bottles are used for diesel/motor oil/kerosene and oil and grease analyses, 40 milliliter volatile organic analysis vials are used for gasoline BTEX, 8010, 8240, and 8260 analyses, and plastic containers are used for total and/or dissolved metals. Volatile organic analysis vials will be immediately capped after collection and placed on ice to minimize loss of volatiles. All other groundwater sample containers collected will be capped and placed in a storage container in a timely manner and as appropriate for the analysis being conducted. Proper containers, sampling collection procedures, and storage requirements will be verified with the analytical laboratory prior to sample collection. Monitoring wells at a site are purged prior to collection of samples, unless the regulatory agency has approved non-purge samples.

After the wells have been adequately purged, they will be allowed to recover to 80% of their original volume prior to sampling. Any well purged to dryness will be sampled after a sufficient volume of groundwater has entered the well to enable the collection of the necessary groundwater samples. All collected groundwater samples are stored in an ice chest on blue ice and transported under Chain-of-Custody documentation. The samples are either transported directly to the analytical laboratory on the day of collection, delivered to the laboratory courier on the day of collection, or are returned to SCS's office where they are stored in a secure refrigerator and then delivered to a California Department of Health Services Certified Analytical Laboratory or a laboratory courier for the requested analyses (except where there is no State certification for the analysis being conducted). Every effort will be made to assure that sample storage will not exceed 72 hours before delivery of the samples to either the laboratory or the laboratory courier. Samples being analyzed for constituents with a longer holding time, such as metals, may be stored for a longer period of time, provided the holding time is not exceeded, before delivery to the laboratory.

Where more than one site is sampled on the same day by the sampler, samples from each site will be stored in separate ice chests. If feasible, samples suspected of being highly impacted will be stored separately from samples which are presumed to be clean. To the extent feasible, samples will be separated based on site and suspected degree of impact while awaiting delivery to or pick up by the analytical laboratory.

All purged fluid is stored on-site in DOT 55-gallon drums pending analysis. The drums and the fluid in the drums are the exclusive property and responsibility of the responsible party. SCS typically samples the drums and arranges for disposal at the appropriate time.

Grab Water Samples

Grab water samples may be collected from the pits, borings, discrete sampler borings, creeks, ponds, and any other bodies or vessels containing water. If the water sample can be safely collected by hand, it will be, otherwise, a disposable bailer will typically be used to collect the sample.

All collected grab water samples will be stored on ice and transported under Chain-of-Custody documentation. The samples will either be delivered directly to the analytical laboratory or to the analytical laboratory courier on the day of the collection, or they will be returned to SCS' office where they will be stored in a secure refrigerator a maximum of 72 hours, and then delivered to a California Department of Health Services Certified Analytical Laboratory for the requested analyses (except where there is no State certification for the analysis being conducted) or the laboratory courier. Again, samples being analyzed for constituents with a longer holding time, such as metals, may be stored for a longer period of time before delivery to the laboratory.

Typically, no purge water will be generated during grab water sampling. Should purging occur, the purge water will be stored on-site in either a DOT 55-gallon drum, or other appropriate vessel, pending analysis. Industry standards are that drums and all produced water are the exclusive property and responsibility of the responsible party. SCS will typically sample such containers and arrange for disposal at the appropriate time.

Sample Handling-QA/QC Elements

Sample Handling

The elapsed time between sample collection and delivery to the laboratory or the laboratory courier will typically not exceed 72 hours. Again, samples being analyzed for constituents with a longer holding time, such as metals, may be stored for a longer period of time before delivery to the laboratory, providing the holding time is not exceeded.

Sealed sample containers will only be opened by laboratory personnel during the specified sample extraction process.

Chain-of-Custody

In order to document and trace sample possession from time of collection, a Chain-of-Custody record will be filled out on the Chain-of-Custody document by the sampler for each sample collected. The Chain-of-Custody document will accompany the sample(s) through laboratory analysis. The completed Chain-of-Custody record for each sample will be included in the analytical report from the laboratory.

Blanks

Blanks will be used or collected as part of the sampling program at the discretion of the project manager and/or the lead regulatory agency. Trip and/or field blanks will be supplied and analyzed along with the samples, at the discretion of the project manager and/or the lead regulatory agency.

Modifications

Any modification to the standard sampling procedures and QA/QC protocol outlined in this document for either soil or water samples will be noted and fully explained in the sampling report.

PERSONAL PROTECTION

Sampling at environmental sites increases the chance of exposure of the sampling technician to chemicals which pose a threat to the environment and may pose a threat to the sampler's short-term and/or long-term health at the concentrations present. Each site will be evaluated prior to conducting any field work to ascertain the chemicals detected in the past, the chemicals likely to be detected in the future, and the likely concentrations of those chemicals to be detected. The chemicals will be evaluated for possible routes of exposure at the concentrations likely to be encountered. Appropriate personal protective equipment to prevent contact with contaminants shall be used. Appropriate chemical-specific gloves shall be worn and changed between sampling events.

In the event the sampler observes or detects activities occurring on or around the site which could cross contaminate collected samples, the sampler will suspend sampling until the activities which may lead to cross contamination cease. If necessary, the sampler will abort the sampling event. Any aborted sampling event will be rescheduled after the suspicious activities are indicated to have ceased, or the activities can be halted during the sampling event. Any suspension or aborting of sampling will be immediately reported to the appropriate registered professional.

Site-specific protection measures are outlined in the Site Health and Safety Plan, where active investigation and/or remediation is occurring.

Active Investigation and/or Remediation
(Refer to Site Specific Health and Safety Plan)

Required personal protective equipment:

Hardhats
Steel toed boots

Recommended personnel protective equipment:

Eye protection
Hearing protection
Gloves to protect against dermal contact with contaminants
Skin protection from sunlight
Photoionization detector/Gas Tech
Respirator (NIOSH approved with appropriate filters for contaminants detected or expected)
Detergent wash and rinse water
First aid kit
Fire extinguisher
Route map to and phone number of nearest hospital

As indicated above, each site must be evaluated on a case-by-case basis to determine the appropriate personal protection materials to use and personal protection activities to implement in the field. As an example, several sun tan lotions contain chemicals which are detected in the diesel range. Care must be taken to prevent cross contamination by sun tan lotion at diesel impacted sites.

Passive Investigation

Recommended personnel protective equipment:

Skin protection
Eye protection
Gloves to protect against dermal contact with contaminants
Detergent wash and rinse water
First aid kit
Fire extinguisher
Route map to and phone number of nearest hospital

As indicated above, each site must be evaluated on a case-by-case basis to determine the appropriate personal protection materials to use and personal protection activities to implement in the field. If a site is known to be heavily impacted, wells should be sampled from the cleanest to most impacted to minimize the potential for cross contamination. The potential for cross contamination can be further minimized by wearing disposable gloves and disposing of gloves after each sample is collected. As an alternative, hands can be washed and rinsed between each sampling event. Where contaminants are non-volatile and do not migrate readily, such as metals, personal protection can be modified to match the primary routes of exposure, which are inhalation and ingestion. In this case it may be appropriate to wear a dust mask if excessive dust is created during sampling. Washing of hands and face before eating or drinking is highly recommended. Protection of clothing by wearing Tyveks is also to be considered, along with washing clothing after each use in conditions where significant dust is created.

Personal protection is designed to prevent or minimize the exposure to the sampler of chemicals or substances which may adversely impact either the short-term or long-term health of the sampler. It is the sampler's responsibility to adequately protect themselves from exposure. All samplers are encouraged to protect themselves and their health to the extent feasible while in the field. All materials necessary to provide adequate protection are available and should be utilized as appropriate.

Cross contamination is to be minimized at all times while sampling. In some instances, proper use and implementation of personal protection will also aid in minimizing cross contamination. The sampler is very highly encouraged to implement proper personal protection, especially where it further minimizes the risk of cross contamination of samples.